DECEMBER 8, 1952

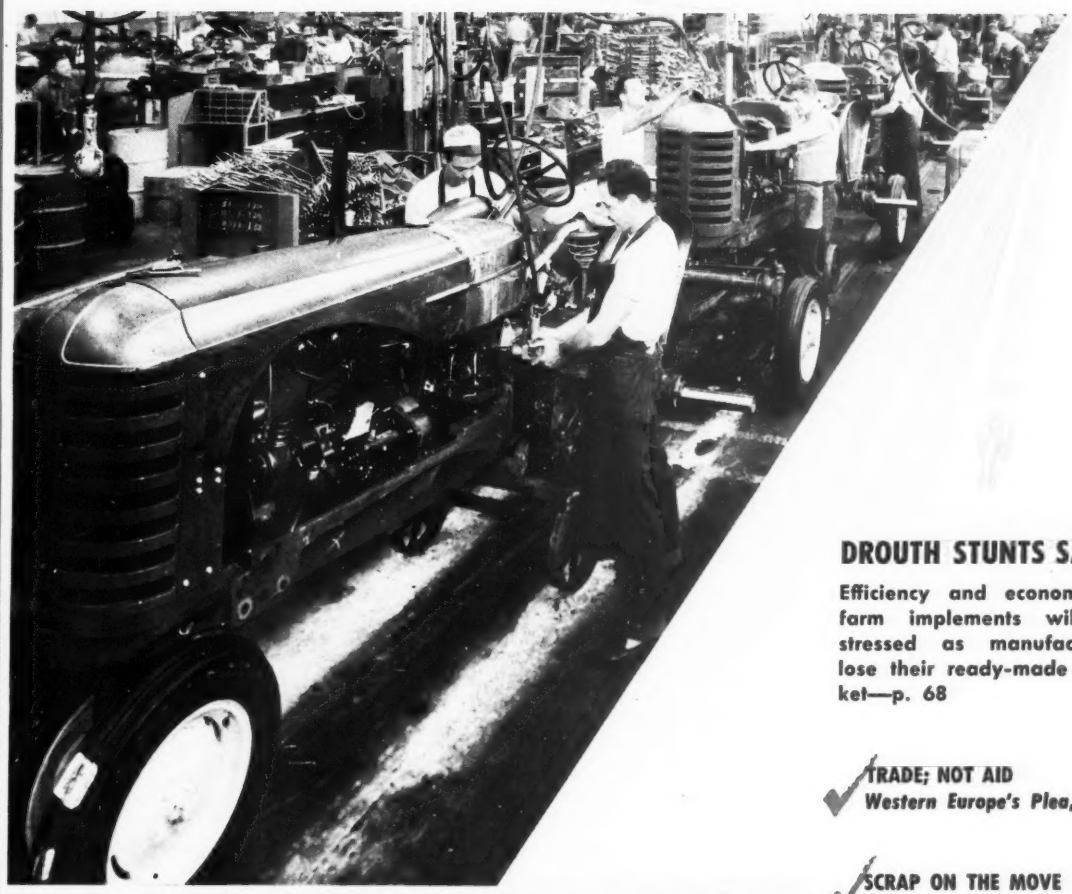
Brown

STEEL

THE WEEKLY MAGAZINE OF METALWORKING

OHIO STATE UNIVERSITY

FARM MACHINERY



DROUTH STUNTS SALES

Efficiency and economy of farm implements will be stressed as manufacturers lose their ready-made market—p. 68

✓ TRADE; NOT AID
Western Europe's Plea, p. 76

✓ SCRAP ON THE MOVE
Conveyors Take It Away, p. 100

CONTENTS — PAGE 5

EXACTLY AS ORDERED!

You're Sure...

to get the accuracy you specify with KORHUMEL SHIM STEEL!

EXTRA WIDE...up to 24"...as thin as .001...in stock!
Warehouse and Mill Shipments

STEEL
Cold and Hot Rolled
Strip and Sheet
Spring Steel, Tempered and Annealed
Feeler Gauge
Round Edge Flat Wire
Shim Steel
Electro Galvanized
Electrical Sheets ★
Tin Plate
Cold Finished Bars
Tubing, Seamless, Welded
Rigidtex Stainless
Hydraulic Tubing

ALUMINUM
Strip and Sheet
Coils
Straight Lengths
Bars

PHOSPHOR BRONZE
Coils and Flats

SERVICES
Slitting
Shearing
Edge Rolling
Bright Annealing
Cold Rolling
Ungerer Roller Leveling

When you order shim steel, accuracy is your most important consideration. That's why it pays to specify Korhumel Shim Steel. Our quality control starts at the mill. Shim Steel must be made to rigid precision specifications, held within extremely close tolerances. From the time it leaves the mill until it is delivered at your plant, it is closely checked and inspected to assure that it reaches you *exactly as ordered.*

To assure you prompt delivery Korhumel Shim Steel is stocked in our warehouse—widths from ¼" to 24" slit exactly to your special requirements.

The Korhumel Sales Engineer in your territory will be glad to call and discuss your shim steel problems. Check your classified telephone directory—call him today, or write for details.

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WIRE FOR SAFETY

Every tire on your car has about 200 ft of strong steel wire anchored in its foundation. These two wire circles, built into the bead of the tire, hold the tire on its rim, help it absorb the shocks of high-speed driving.

Tire chains are steel wire, too—used less often, but priceless when you're pulling out of a curb-side ice pack or piloting a slippery highway.

Much of the wire going into and around tires today comes from Bethlehem mills. Tire-bead wire is high-carbon, high-tensile wire. We give it just the right toughness after its reduction by drawing.

With chain wire, we keep in mind manufacturers' forming operations. This wire must be of uniform, high quality to withstand rapid fabrication and a fast, sure butt-weld at every link.

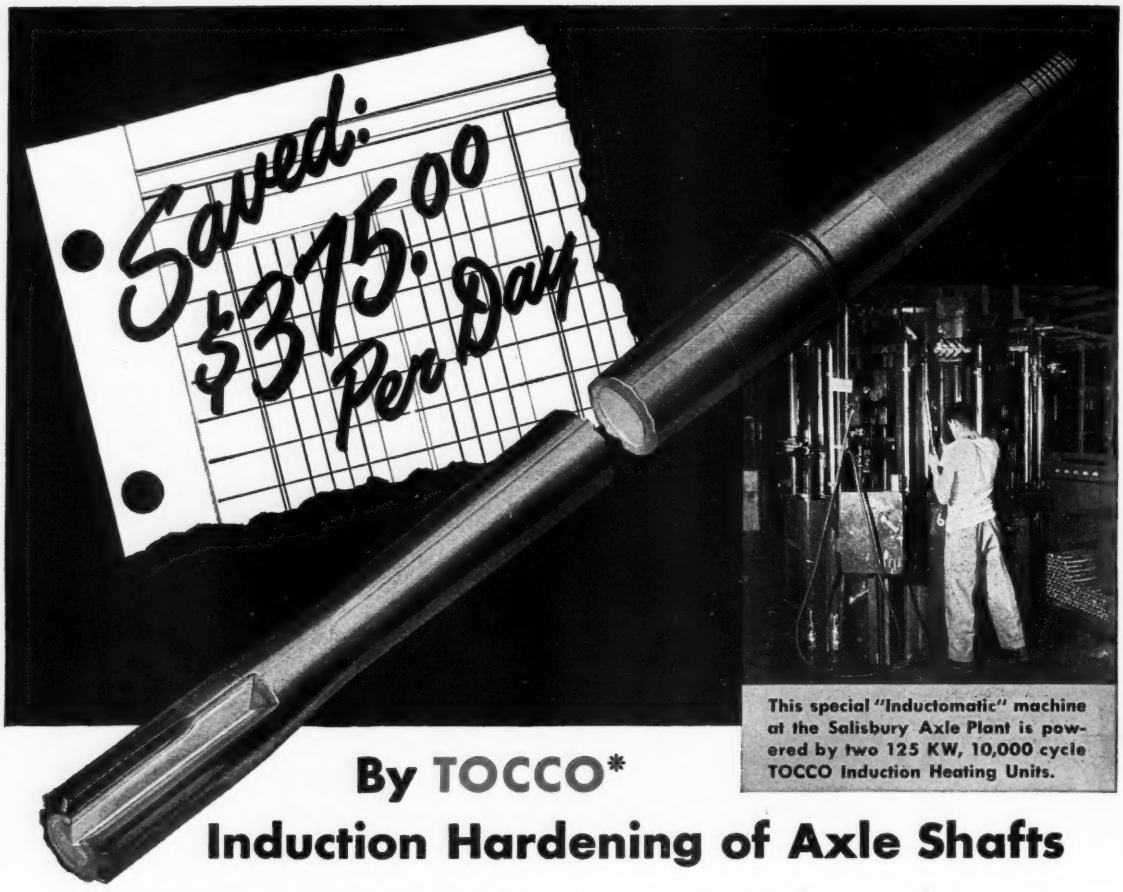
A big part of our job is working closely with wire users, developing the best possible kind of wire for each one of hundreds of different applications. If you're interested in discussing steel wire, we'll gladly arrange for an experienced Bethlehem engineer to visit you.

BETHLEHEM STEEL COMPANY
BETHLEHEM, PA.

On the Pacific Coast Bethlehem products are sold by Bethlehem Pacific Coast Steel Corporation. Export Distributor: Bethlehem Steel Export Corporation

BETHLEHEM WIRE

★ BETHLEHEM STEEL ★



This special "Inductomatic" machine at the Salisbury Axle Plant is powered by two 125 KW, 10,000 cycle TOCCO Induction Heating Units.

By TOCCO* Induction Hardening of Axle Shafts

WHAT progressive engineers at the Salisbury Axle Division of Dana Corporation have done with Induction Heating for hardening automotive axle shafts suggests comparable savings for your products. Note this report:

SAVINGS of $375.00 per day caused by increased output and switch from SAE 4140 to SAE 1033 steel made possible by induction hardening.

LESS MACHINING time because shaft of SAE 1033 steel is completely machined prior to hardening. Tool cost cut in half—turning time reduced from 2 minutes to 30 seconds.

PRODUCTION DOUBLED. Formerly 50 axle shafts per hour with conventional combustion type heating—now 120 per hour with TOCCO.

PRODUCT IMPROVED. Torsional fatigue has increased 200%. The shaft is no longer a compromise between durability and machinability. It is hardened to 55 RC and drawn back to 43-47 RC. Degree of hardness and depth is accurately controlled.

TOCCO Engineers will gladly survey *your* operations for similar cost-cutting results in hardening, heat-treating or brazing—without obligation.

THE OHIO CRANKSHAFT COMPANY

TOCCO

Mail Coupon Today

FREE BULLETIN

THE OHIO CRANKSHAFT CO.
Dept S12, Cleveland 1, Ohio

Please send copy of new bulletin. *"Principles of TOCCO Induction Hardening and Heat Treating".*

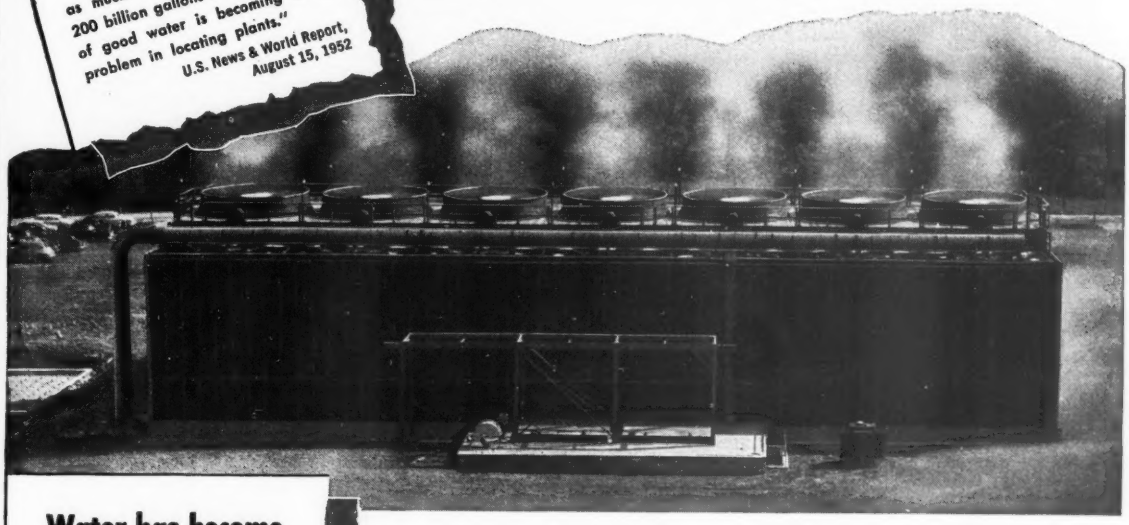
Name_____
Position_____
Company_____
Address_____
City_____ Zone____ State_____

this Marley Cooling Tower will be *twice* as valuable tomorrow!

2½ times as much water in 1975...

". . . And there's industrial water — water used by industries for cooling or washing, or as a material. Industry will be needing 2½ times as much in 1975 — something like 200 billion gallons a day. Shortage of good water is becoming a key problem in locating plants."

U.S. News & World Report, August 15, 1952



Water has become a problem...

"Even water, once regarded as a 'free commodity' of virtually unlimited supply, has become a problem. . . . The essence of the . . . problem is *costs*."

Fortune, August, 1952

Industry will spend about $10 billion more...

"The waste of our civilization threatens one of our vital resources: water. . . . It is estimated that . . . U.S. industries will probably have to spend about $10 billion more . . . " (to handle waste water in the next 20 years).

Scientific American, March, 1952

In 1975, according to reliable estimates, American industry will require 2½ times as much water as it does today. It follows that the ability of your present cooling equipment to conserve water will be of much greater value tomorrow when water is twice as scarce. Provided, of course, that the cooling towers you buy now are still operating in 1975.

If you buy Marley towers today, you are investing in this added value, for only Marley offers the rugged, service-proved structural features that assure such long-term, trouble-free performance. Marley provides today the design refinements that will still be modern in years to come—full height louver walls . . . open distribution . . . MortisLocked filling . . . mechanical equipment engineered exclusively for cooling tower service.

Many Marley towers have been in service for 25 years —and continue to deliver cold water day in, day out. That's why, no matter what your term of amortization, you will find a Marley cooling tower among your major assets long after it has been written off the books.

For a sound investment in the future of your company, buy your next tower from Marley, world's leading producer of water-cooling equipment.

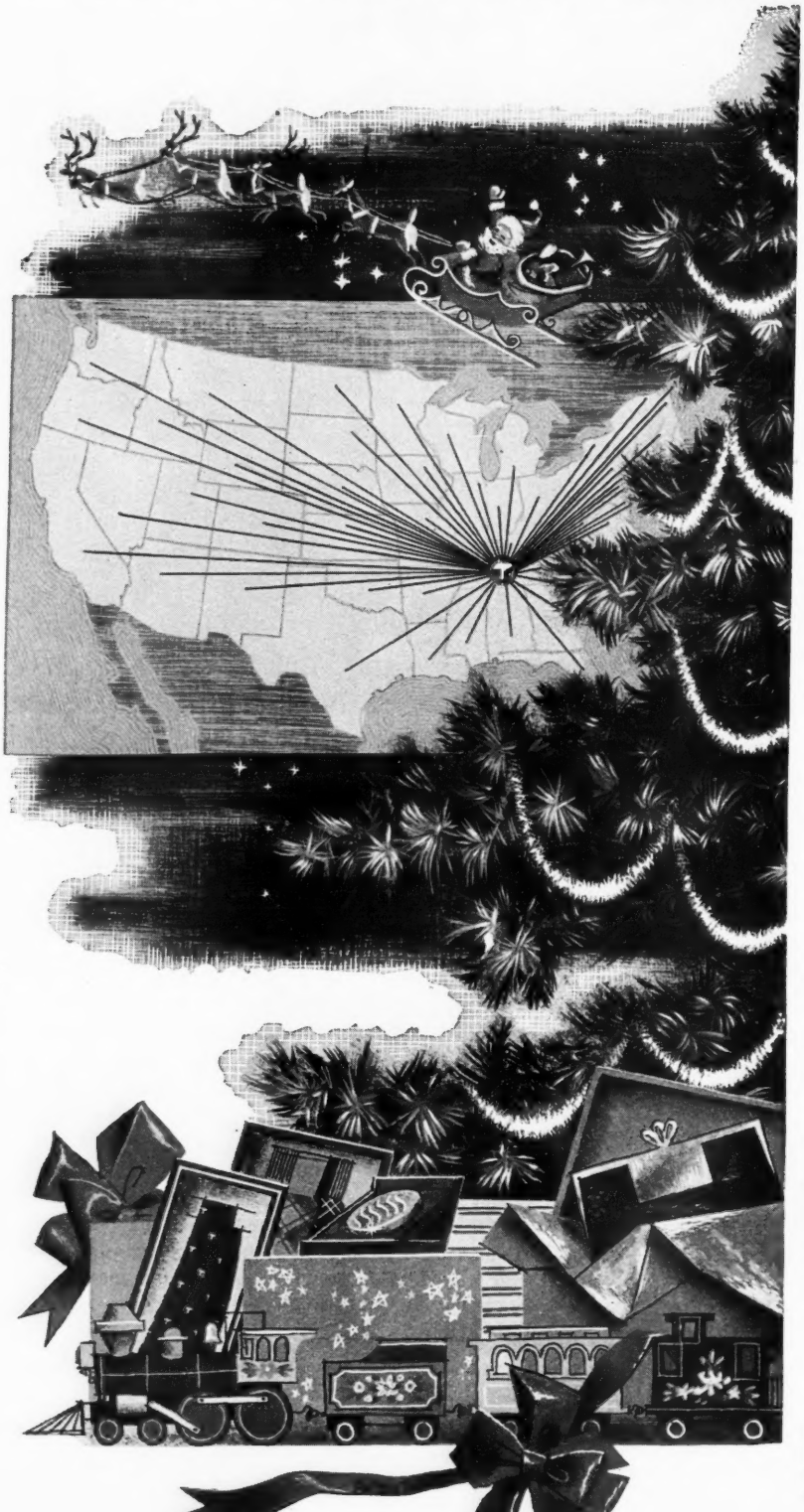
MARLEY

The Marley Company

Offices in 50 Cities

Kansas City 5, Missouri

THERE'S A TOUCH OF TENNESSEE IN MERRY CHRISTMAS



In Dad's necktie,
in Mother's handbag,
in Junior's socks,
in Sister's compact,
in Baby's toys.

To those industries across the nation whose business has made Tennessee Products what it is, and to the millions of Americans they serve—a Merry Christmas and a Happy New Year.

TENNESSEE
PRODUCTS & CHEMICAL
Corporation
NASHVILLE, TENNESSEE

Producers of: **FUELS • METALLURGICAL PRODUCTS • TENSULATE BUILDING PRODUCTS • AROMATIC CHEMICALS WOOD CHEMICALS • AGRICULTURAL CHEMICALS**

This Week in Metalworking

STEEL

Vol. 131 No. 23 Dec. 8, 1952

Metalworking Outlook 57
New aspects of controls, labor and other subjects are analyzed for your guidance by the editors

As the Editor Views the News 61

Windows of Washington 72

Mirrors of Motordom 79
Detroit editor H. C. Tuttle comments on what's new in metalworking's biggest market

The Business Trend 83

Men of Industry 87

Production-Engineering News at a Glance 93

Custom Mill Tackles Production Headaches 94
Handling jobs the bigger companies don't want, a small company makes precision rolling its stock in trade

More Indium Metal—Can You Use It? 98
Increased availability of this specialized metal may expand its applications as an alloying material

Conveyor Network Moves Scrap 100
Twenty connecting conveyors connect into 1145-foot long main line. Manual handling is eliminated

Progress in Steelmaking 106
Ingot Mold Wash Ends Coating Fumes—Unpleasant fumes associated with coating and pouring disappear

New Products and Equipment 147

The Market Outlook 163
Metal Prices and Composites appear on Page 164

The Metal Market 175

Behind the Scenes	6	Obituaries	90
Letters to the Editors	10	Calendar of Meetings	144
Subcontract Summary	70	Helpful Literature	159
Checklist on Controls	71	Metalworking Briefs	185

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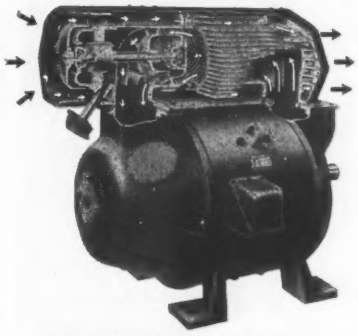
for Wider Speed Ranges... Higher Ratings



Cutaway of Dual-Cooled Type 'T' Heavy Duty D-c. Motor showing counterflow of internal and external cooling air through heat exchanger.

RELIANCE
Totally-Enclosed Dual-Cooled
PATENT APPLIED FOR
D-C. MOTORS

New Reliance Dual-Cooled Motors provide dependable totally-enclosed, fan-cooled operation over wider speed ranges and higher ratings than were ever before possible . . . and this is accomplished with floor-space savings of up to 30%!

Dual-Cooled Motors are completely enclosed . . . have two separate cooling systems operating independently of the motor speed. One system circulates high-velocity air within the motor, that is cooled in the finned inner duct of the heat exchanger.

This heat is dissipated in the other system by air currents sweeping through the fins of the outer duct.

The Dual-Cooled Motor is especially adaptable to Reliance adjustable-voltage V*S Drive and is available in ratings from 15 through 150 horsepower. Explosion-proof Dual-Cooled Motors are available through 100 hp., in conformity with Underwriters and Bureau of Mines specifications.

Get further details from the nearest Reliance Sales Office . . . or write for Bulletin C-2201.

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● Materials and tools are efficiently separated, stock bins easily marked and shipping legibly identified when you use Pannier SAFETY TAGS. Durable, easily attached, and proof against defacing, these tags are supplied blank or with company name; are available in individual units or coiled lengths, and in tin, copper, brass, aluminum, steel, stainless steel and other metals .014" thick or lighter. Coiled tags are nicked for easy separation, and notched for proper feeding into Pannier or other embossing machines; are available with slots or holes as desired.

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Behind the Scenes...

Specials

Those of you who have been keeping track of and observing faithfully the special weeks will be fascinated to note that this is International Golden Rule Week.

Annual Issue

Work on the STEEL Yearbook is now well under way. We'll keep you as informed as possible on the progress of this giant issue that's due the first of the year.

We talked to Ed Karpick, associate editor, and he tells us that the technical articles for the issue are going to be complete summaries of conditions in the different fields (15 of them) of metalworking.

We've done some tabulation for you on the status of the book. So far we figure that the typewriter keys have been hit 1,477,394 times just on the technical copy. If this were all set on one line and the line stood on end it would be as tall as 7.3 Empire State buildings stacked on top of each other.

There has also been an extra 743 cups of coffee consumed—a lot even for editors, and an extra 14½-day light bill will be presented to Penton Publishing Co. for the night work so far.

From what we've seen of the plans for the articles and for the rest of the book it will be a STEEL issue for close reading and digesting. It's kept the editors up nights and weekends. Some of them practically live here.

Silver Quill

Bernard C. Duffy, president, Batten, Barton, Durstine & Osborn Inc., an advertising and public relations house, has been awarded the second annual Silver Quill Award. The award is sponsored by National Business Publications Inc., and is given for "most distinguished services to business and industry through the Business Press." Presentation was made by Benjamin F. Fairless, chairman of the board, United States Steel Corp.

The first award of the Silver Quill was made a year ago. Recipient that time was Paul Wooton, chairman of the executive committee of the Society of Business Magazine Editors. President of the society is Editor Irwin Such of STEEL.

More on the Spider

Most of the puzzle solvers will remember the spider and the fly problem we had in the Oct. 6th issue. It brought us a letter from T. A. Feucht of Indianapolis, Ind. He tells about how he had what he thought was the right answer and then found we had another one.

It apparently spurred him into considerable research on the subject. Without going into his calculations we can tell you that he figured four alternate courses for the spider to walk with the limiting distances on each. He (and we) decided that was some smart spider.

Puzzle Corner

In the issue of Nov. 24 the philanthropist has $2.20 to split with 28 beggars. First across the line with that were: Ralph Pappenheimer, Specialty Device Co., A. Humbel, Pioneer Machine & Engineering Co., Thomas M. Sagendorph, Penn Metal Co., M. F. Coon, Sharon Steel Corp. and L. D. Rice, Timken Roller Bearing Co.

In his reply M. F. Coon suggests this one: Sam is out on the lake in his boat, fishing. He's 24 miles straight out from the dance hall and the shoreline is straight. His home is 38 miles straight down the beach from the dance hall. Suddenly he decides he has to get home in the shortest possible time—for one reason or another.

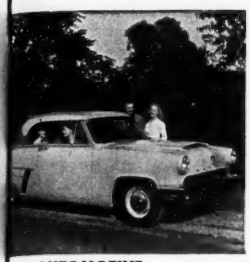
He can get 8 mph out of the outboard and by sprinting he can do 10 mph on the shore. How far up the beach from his home should he land? (We think that when he gets home, his wife should straighten him out on being 24 miles from shore in a boat with an outboard.)

Shrdlu

(Metalworking Outlook—Page 57)

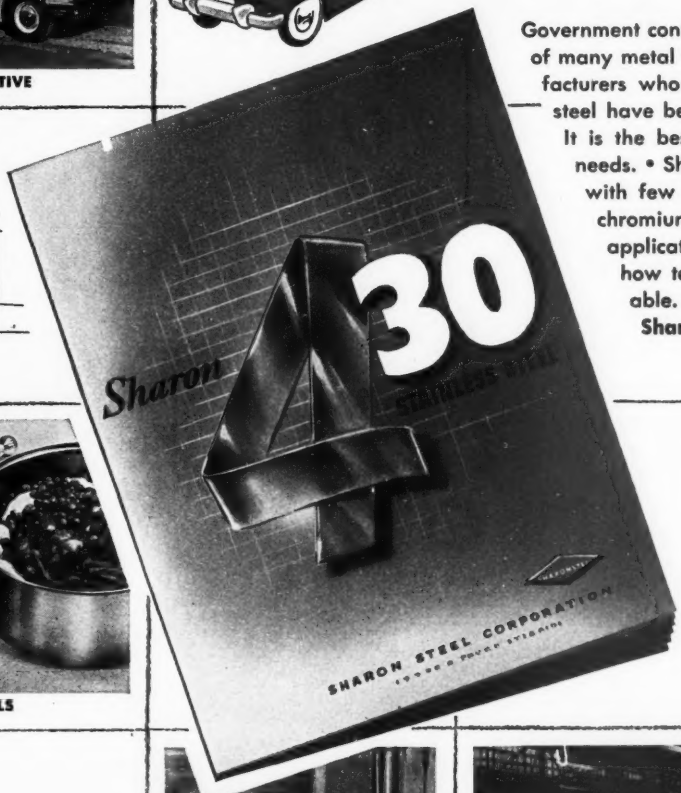
Now-

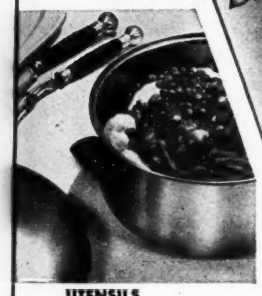
facts about 430 Stainless Steel for manufacturers concerned about critical materials



AUTOMOTIVE

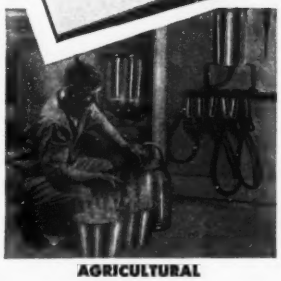
Government controls are pinching the raw material supplies of many metal fabricators. However, many of these manufacturers who are familiar with Sharon "430" stainless steel have been able to quickly adapt it to their needs. It is the best available material for many of today's needs. • Sharon "430" is in good supply and available with few restrictions as to end use. It is a straight chromium stainless steel with hundreds of successful applications. A new booklet with instructions on how to fabricate Sharon "430" stainless is available. Get your copy by writing department 8115, **Sharon Steel Corporation, Sharon, Pa.**



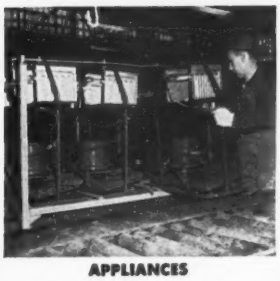


UTENSILS

SPECIAL



AGRICULTURAL



APPLIANCES

ARCHITECTURAL

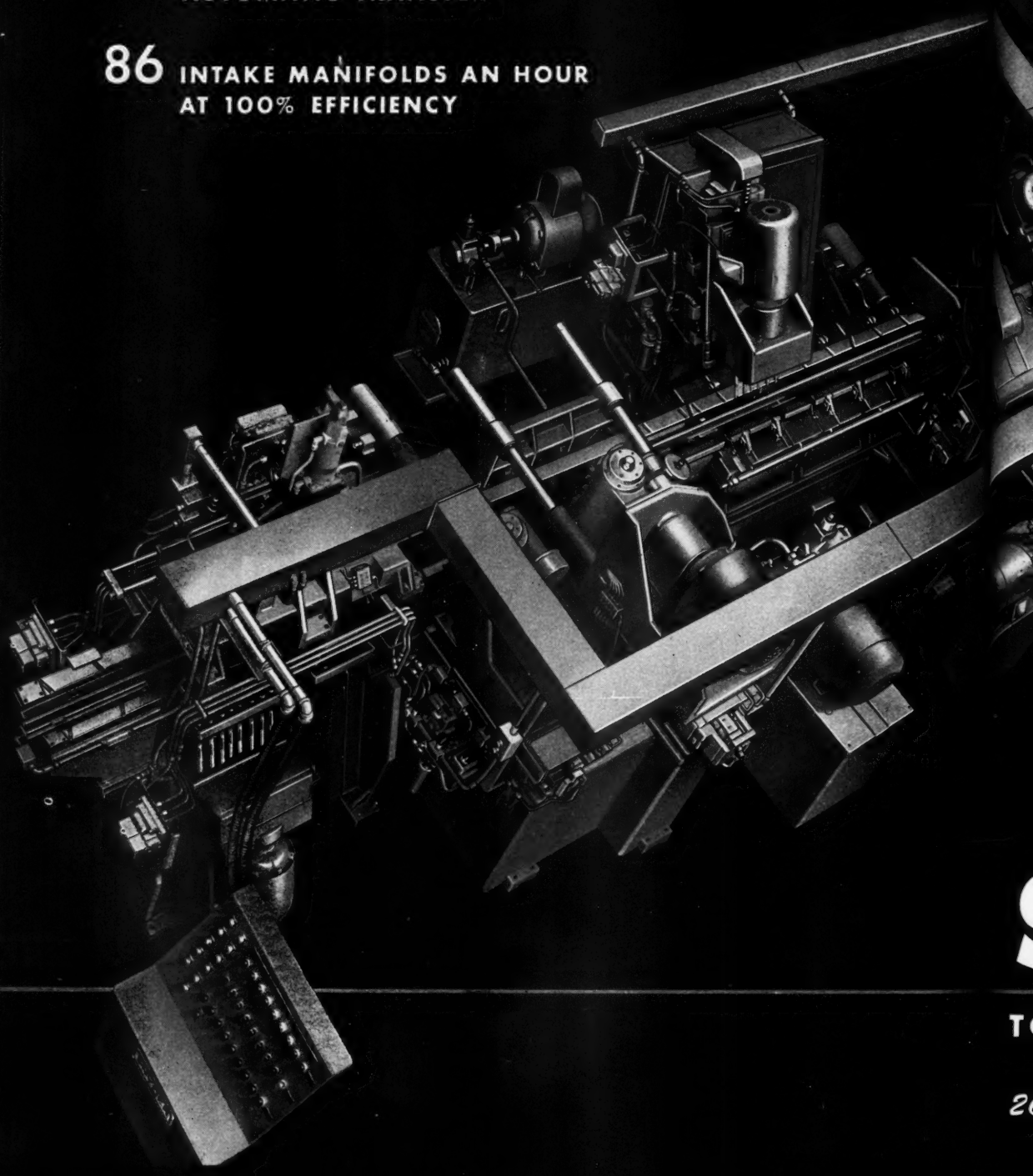
Sharon 430 stainless steel

SHARONSTEEL

SNYDER MACHINES CONTROL COSTS

22 STATION
AUTOMATIC TRANSFER

86 INTAKE MANIFOLDS AN HOUR
AT 100% EFFICIENCY



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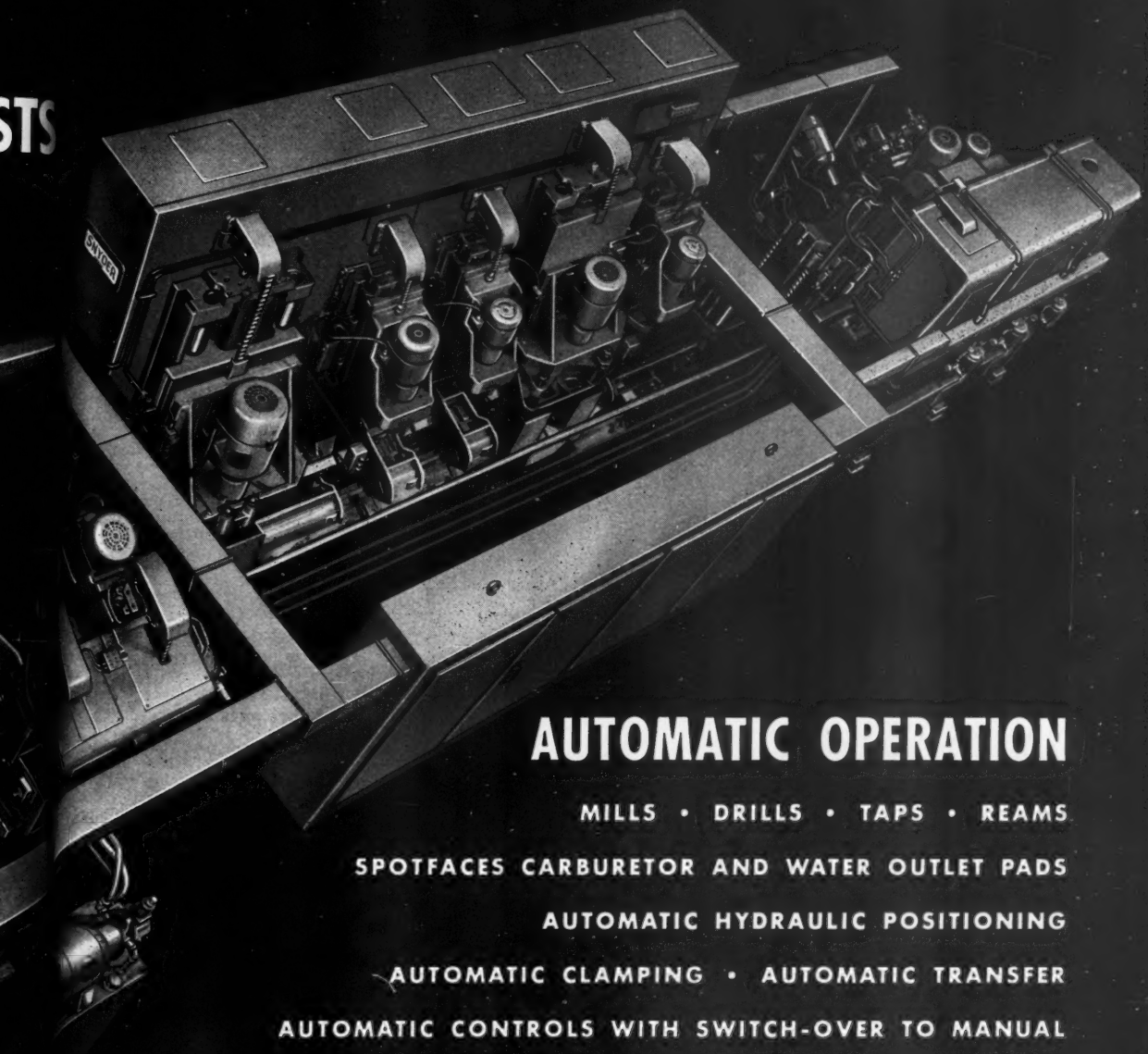


AUTOMATIC OPERATION

MILLS • DRILLS • TAPS • REAMS

SPOTFACES CARBURETOR AND WATER OUTLET PADS

AUTOMATIC HYDRAULIC POSITIONING

AUTOMATIC CLAMPING • AUTOMATIC TRANSFER

AUTOMATIC CONTROLS WITH SWITCH-OVER TO MANUAL

AUTOMATIC LUBRICATION

AUTOMATIC SAFETY INTERLOCKING SYSTEM

SKILLED OPERATORS NOT NEEDED

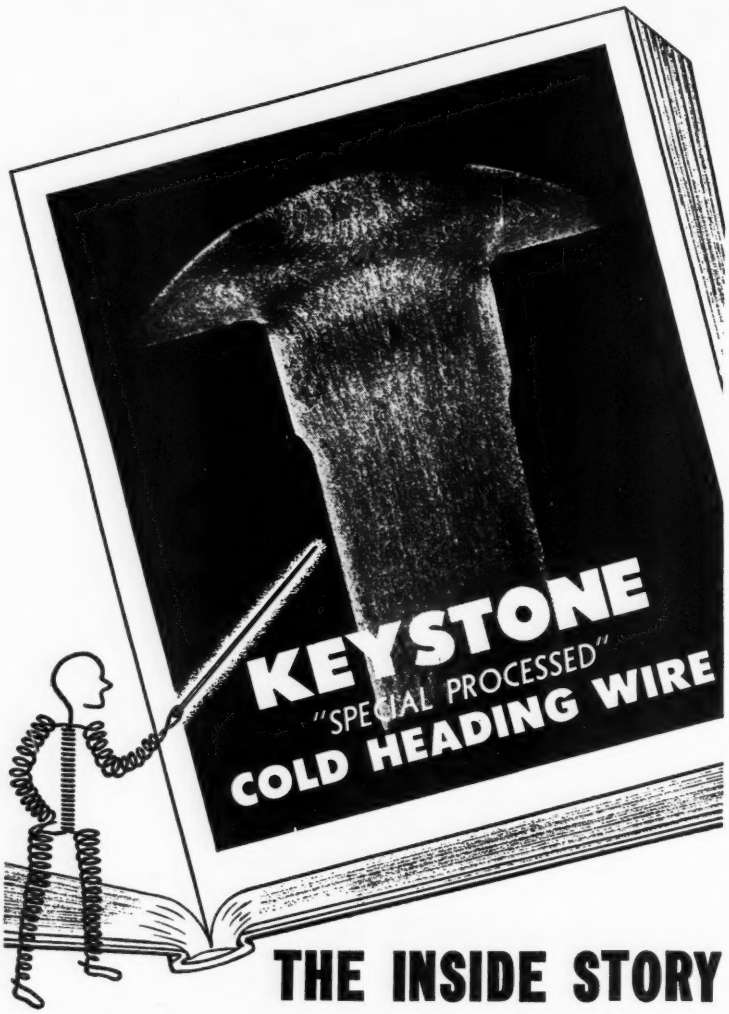
SNYDER

TOOL & ENGINEERING COMPANY

3400
E. LAFAYETTE

DETROIT 7,
MICHIGAN

26 Years of Successful Cooperation with Leading American Industries



THE INSIDE STORY

Long continuous fibers through shank and head are the "inside" proof of efficient cold-heading.

The above macrograph shows the uniform strength-giving, grain-flow characteristics in a bolt made from Keystone C1038 Special Processed Cold Heading Wire. Such uniform grain flow assures longer die life, increased production, and a better finished product.

Whatever your industrial wire problems might be, Keystone metallurgical research and testing facilities are available to supply the answers.

INDUSTRIAL WIRE SPECIALISTS

Keystone Steel & Wire Company
PEORIA 7, ILLINOIS

LETTERS
TO THE EDITORS

Belgians Pick Market Outlook

We always read with great interest your article "The Market Outlook" which appears in STEEL.

Our correspondents in Belgium have asked if they would be allowed to make copies of the American steel prices which are on the back of the "Market Outlook." They have customers who would be interested in receiving this information.

Robert J. Savoye
vice president
Belgian American Mercantile Corp.
New York

• *Your correspondents may reprint these prices if proper credit is given* STEEL.*—ED.*

Glass Lubricants Soon

Referring to the item "Glass Substitute" (Nov. 10, p. 62) which mentions a glass lubricant for forging steel, we would appreciate your advising us the name of the company which produces that product.

R. E. Cecil
vice president
Scaife Co.
Oakmont, Pa.

. . . can you advise us as to the firm in Pennsylvania who will process the lubricant as mentioned.

J. Daverio
Canton Drop Forging & Mfg. Co.
Canton, O.

• *The company involved is still "working out the kinks" on this new type of glass lubricant. They expect to have more complete information available soon, but until that time would prefer to remain anonymous.—ED.*

Solution to Waste Problem

This installation would like to receive tear sheets of your article "Ion Exchange—New Hope for Waste Recovery" (Oct. 20, p. 96).

We anticipate a problem which will require the exact solution which you have presented. Thus, we find this article timely and quite valuable.

G. F. Noyes
Benicia Arsenal
Ordnance Corps
Benicia, Calif.

• *They're being sent.—ED.*

Searching for Air Facts

Our firm is presently engaged in a business and market study of the air conditioning industry, with particular emphasis on room air conditioners of

Continued on following page

FOR SUPERIOR Coatings

Think first of the coatings that last!

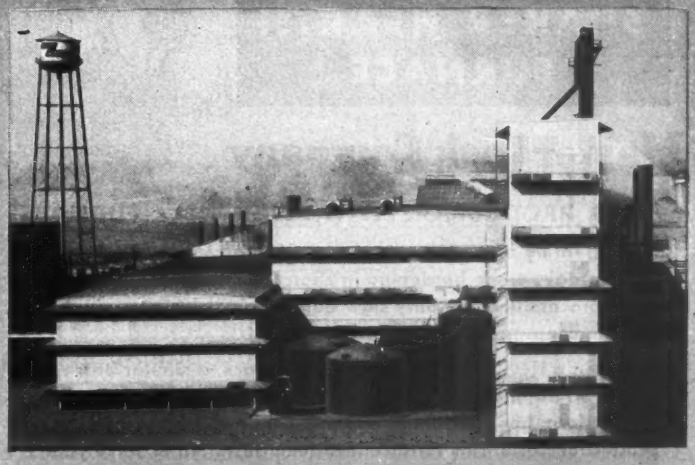
INSUL-MASTIC

Corrosive conditions in paper pulp mills and steel mills are terrific. The atmosphere in these plants is charged with acids and alkalis that eat the heart out of steel in a few years—or even a few months. INSUL-MASTIC *superior* COATINGS are giving protection that will last for years to this costly metal equipment in these extremely corrosive places.

In other industries also, Insul-Mastic Gilsonite Coatings are being specified because of their resistance to chemicals and moisture vapor; their minimum shrinkage and great temperature range.

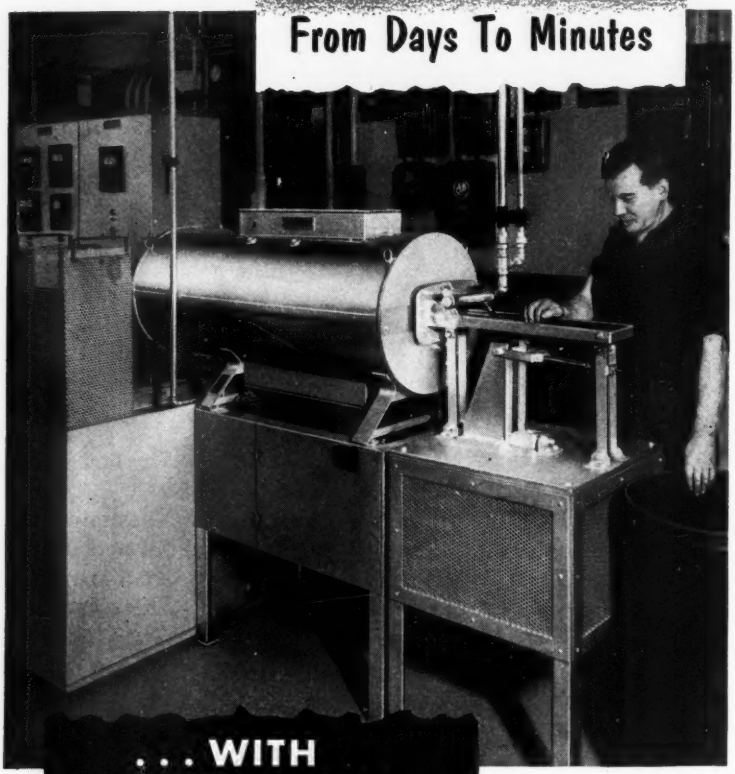
For long coating life under severe conditions specify INSUL-MASTIC *superior* Coatings.

ST. REGIS PAPER CO., *by using Insul-Mastic Type "D", the Coating that Insulates and Protects,* will prevent up to 65% of heat loss from these black liquor tanks and foam tank. Many other vessels throughout this modern new mill at Pensacola, Florida are coated with Insul-Mastic for corrosion prevention as well as insulation.



Insul-Mastic Corporation
OF AMERICA
1166 OLIVER BUILDING · PITTSBURGH 22, PA.
Representatives in Principal Cities

Hardening Time Cut
From Days To Minutes



. . . WITH
HEVI DUTY
SHAKER HEARTH
FURNACE

Master Lock Company

SPEEDS PRODUCTION WITH THIS NEW FURNACE

Heat treating of an 80 pound batch of small springs required two days when hardening in charcoal filled containers. This process was not only slow but also costly due to a high percentage of rejects.

Now in a Hevi Duty Shaker Hearth Furnace, a similar batch is "bright" hardened in 75 minutes. Each spring receives uniform heat treatment without distortion thus cutting production costs. This furnace has been designed to solve your problem of heat treating small parts.

HEVI DUTY®

Learn more about this modern production tool and the way it can help you.

WRITE FOR BULLETIN HD-850.

HEVI DUTY ELECTRIC COMPANY

MILWAUKEE 1, WISCONSIN

Heat Treating Furnaces . . . Electric Exclusively

Dry Type Transformers *Constant Current Regulators*

LETTERS

Concluded from preceding page

the window sill type having capacities of 1/3, ½ and ¾ ton.

We have read several articles in various issues of STEEL on this subject and are wondering whether you may have made studies which might be helful to us in this connection.

George C. Parkard
Ebasco Services Inc.
New York

• *A research study, "The Market for Air Conditioning in the Metalworking Industry," is sent.—ED.*

A Story of Ingenuity

In the Aug. 25 issue of STEEL, there was published an article entitled "A South Korean Industrial Scrapbook" (p. 74). I would like very much to have this story for my files.

Berthold Gerow
17969 Saratoga Road
Los Gatos, Calif.

• *Tear sheets are sent.—ED.*

The Reprint Department

Will you kindly send us a reprint of the article "Steelmaking Processes Re-examined" which appears in your Oct. 6 issue (p. 102).

L. Schlossberg
Quaker Chemical Products Corp.
Conshohocken, Pa.

We have noted with considerable interest your article "Chromium Plating . . . New Life for Worn Parts" (Mar. 31, p. 76). Can we get 6 sets of tear sheets of that article?

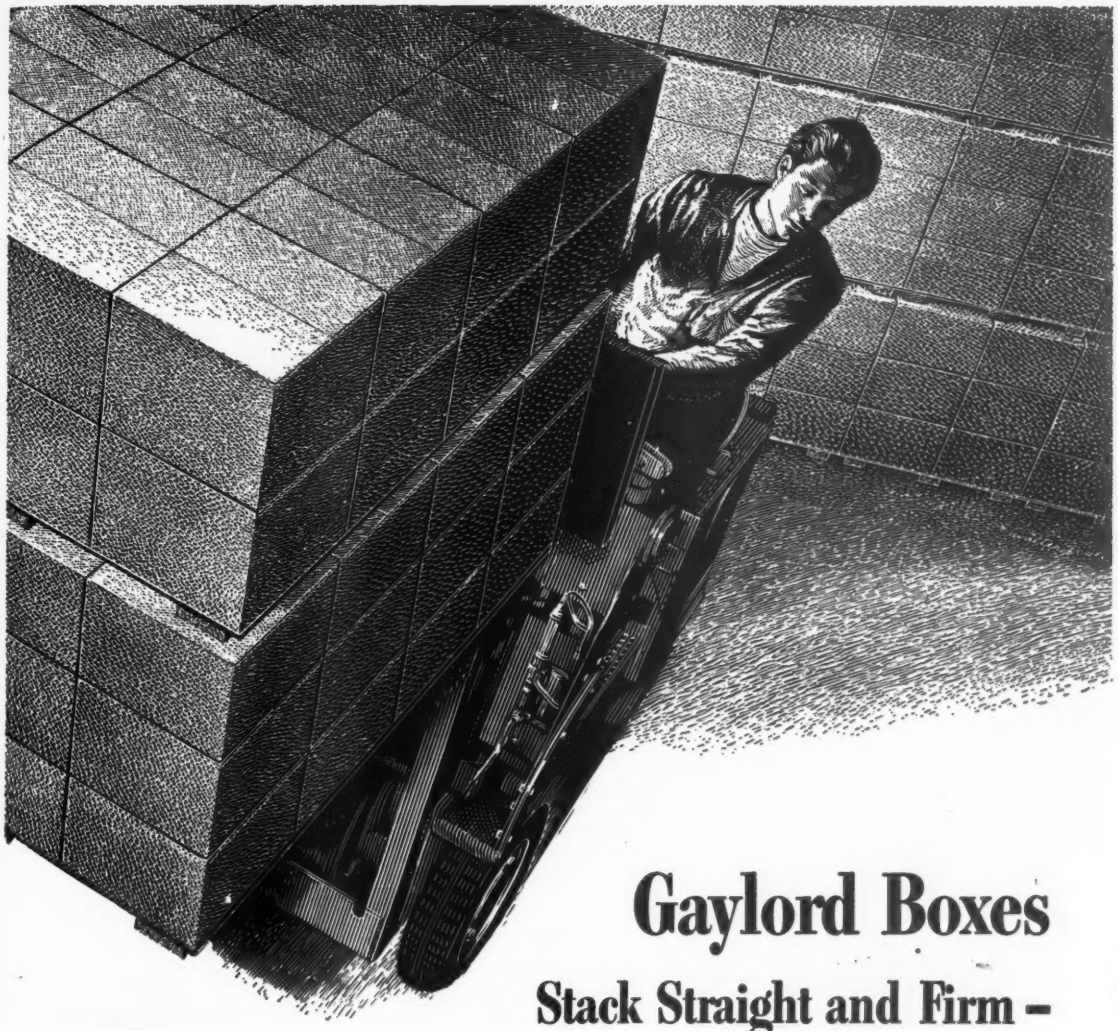
H. F. Littlejohn Jr.
Ward Leonard Electric Co.
Mount Vernon, N. Y.

• *They're on the way.—ED.*

Found: A Booster

It is my wish to say that STEEL stands first in interesting and constructive data of any magazine of several which are consistently read and I can assure you that each issue will be looked forward to until I retire.

E. J. Downing
Gardner-Denver Co.
Denver, Colo.



Gaylord Boxes

Stack Straight and Firm – Save Time and Labor in Handling

Gaylord Boxes

Their unseen quality gives you an extra margin of safety.

The strong, rigid corrugations of Gaylord Boxes plus their accurate scoring assure flaps that close perfectly.

This controlled quality means a real saving of time and labor—as well as tempers—on the production line as well as in the warehouse.

Gaylord's Research and Engineering Division is at your service. Check with the sales office nearest you for the latest developments in packaging for your industry.

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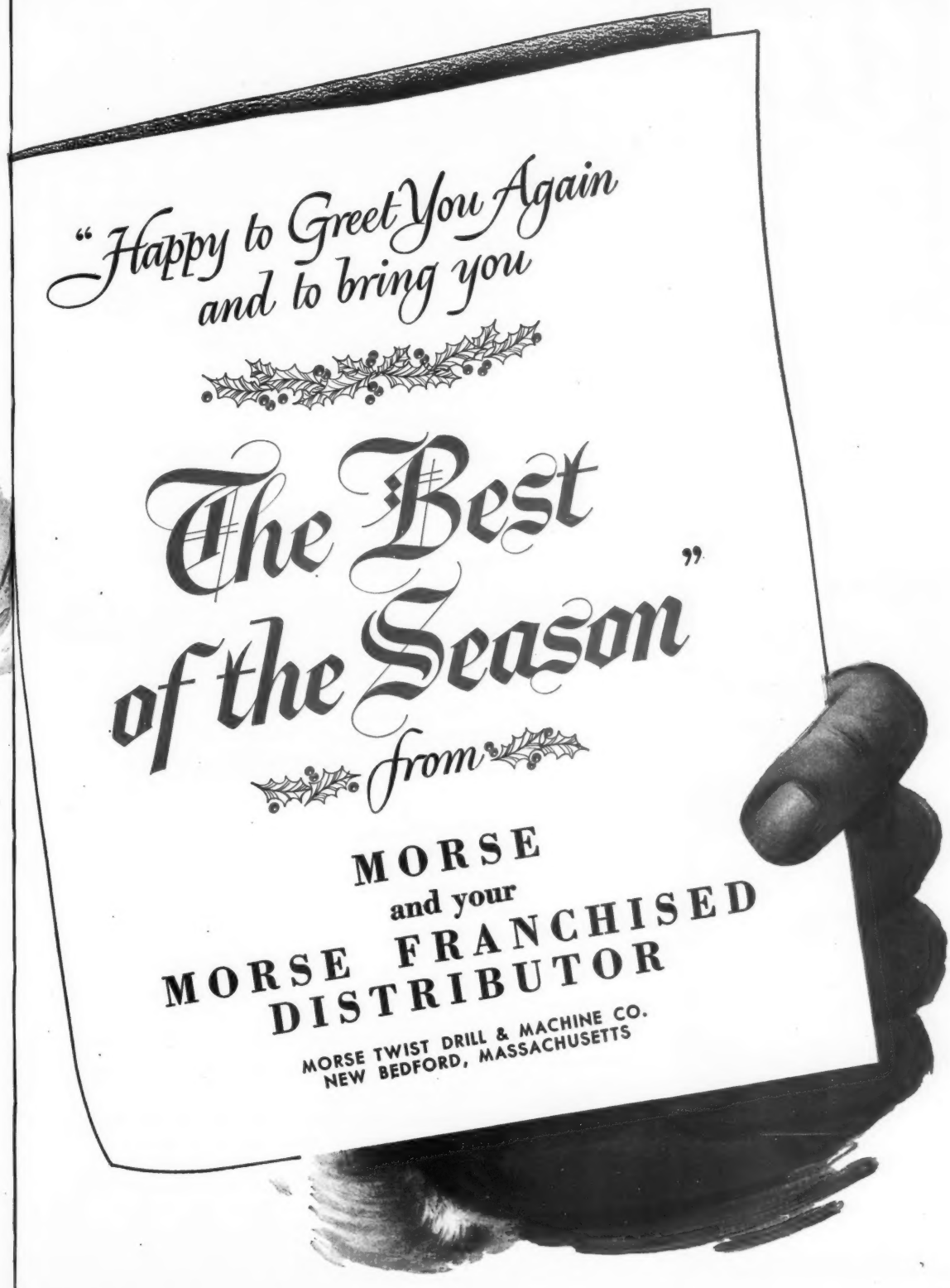
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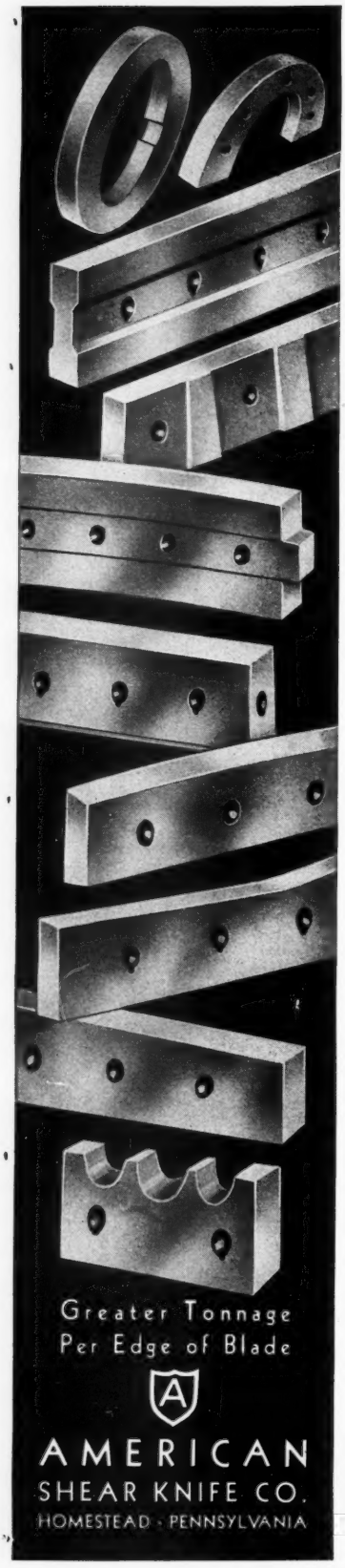

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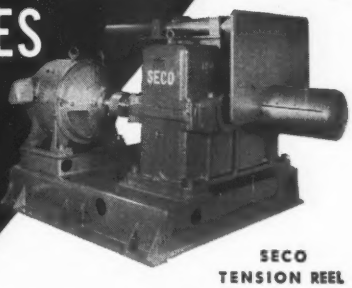
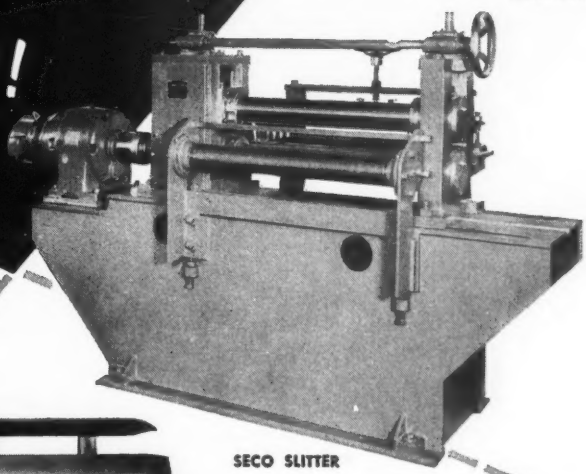
Here's a NEW LOW COST SLITTING LINE for YOU!



SECO TENSION REEL



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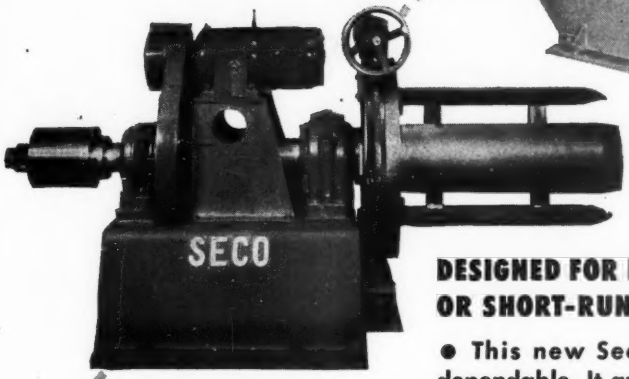


SECO PAYOFF REEL

SECO DESIGNS AND BUILDS STEEL MILL EQUIPMENT

Leveling and Shearing Lines
Combination Edging and Flattening Lines
Tension Reels for Strip Polishers
Narrow Strip Grinding Machines
Multiple Strand Pull-Out Rolls and Take-Up Frames
Strip Coilers of the Up and Down Coiling Types
Traverse Reels for Narrow Strip
Scrap Ballers

DESIGNED FOR LONG-RUN CONTINUOUS OPERATION OR SHORT-RUN INTERMITTENT SERVICE!

● This new Seco Slitting Line is fast, accurate and dependable. It quickly pays for itself with minimum use. Relatively low cost has been achieved through economy of design, without sacrificing rugged durability. This Seco Slitting Line is built to the same high-precision standards of heavy-duty mill type equipment.

The slitter is pull through type . . . available in sizes from 12" to 36" wide. The 30" line illustrated above easily handles 6 to 8 cuts of .062 stock at 150 to 375 f.p.m. line speeds. Electrical equipment is A.C. driven, constant speed. Payoff and Tension Reels handle up to 10,000 pound coils.

Investigate the advantages of operating your own slitting line.

WRITE TODAY FOR COMPLETE SPECIFICATIONS AND OPERATING DATA

SECO

STEEL EQUIPMENT COMPANY
P. O. BOX 737, WARRENSVILLE STATION
CLEVELAND 22, OHIO

For Allegheny Ludlum...

Koppers builds new electric furnace melting shop

THIS modern, three-furnace electric melting shop, recently completed by the Freyn Engineering Department of Koppers, at the Watervliet Plant of Allegheny Ludlum Steel Corporation, has a rated capacity to produce 75,000 tons of high-alloy, stainless and specialty steel ingots per year.

Design of this plant is characterized by the efficient handling and easy flow of materials. It incorporates numerous novel features.

The project centers in a three-aisle building, covering about 60,000 sq. ft., providing stock house, furnace and pouring areas. Supplementary construction includes an office and locker-room building, a new 115/13.8 kv. substation, an addition to an existing substation, an extensive railroad track system with storage and dump sidings, an oxygen plant and other facilities.

Situated at the edge of the plant property, the new shop is built into a sharply rising hillside. The stock yard, on a common elevation with the furnace platform, provides level movement of materials to the furnaces. The stock yard is equipped with 33 heavy timber bins for scrap. A series of 32 concrete alloy and material bins provides natural flow into the furnace aisle.

Two of the electric furnaces are of 25 tons capacity; the third has a capacity of 12 tons. These furnaces are high-powered. The smaller furnace is provided with interchangeable shells.

The pouring aisle, on a lower elevation, is served by two 50-ton cranes and is provided with a versatile pouring platform with step-stools to accommodate variations in ingot heights.

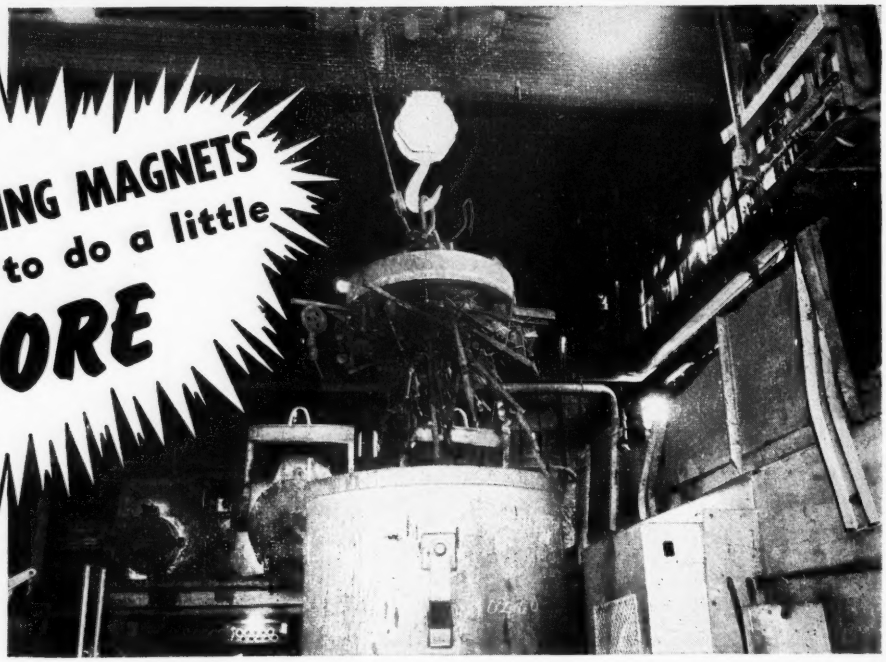
Several months of operation have proved the capacity of this new plant to attain its projected tonnage and to stay within predicted operating costs.

Constructing electric furnace melt shops is just one way in which Koppers serves the steel industry. For any kind of metallurgical construction, you can count on Koppers. You are invited to consult with our Engineers and Management.

KOPPERS

Engineering and Construction Division

KOPPERS COMPANY, INC. **PITTSBURGH 19, PA.**



DINGS LIFTING MAGNETS
Designed to do a little
MORE

OTHER DINGS PRODUCTS FOR THE FOUNDRY—

Electric and Non-electric Magnetic Pulleys

Non-electric Magnetic Drums

Non-electric Perma-Plate Magnets

Self-Cleaning Perma-Plate Magnets

Rectangular Suspended Magnets

Self-Cleaning Rectangular Suspended Magnets

Portable and Stationary Pulley-type Separators

DINGS ALL-WELDED, WEATHERPROOF LIFTING MAGNETS:

- LIFT A LITTLE MORE
- WEIGH A LITTLE LESS
- LAST A LITTLE LONGER

— BUT COST NO MORE

BACKED by over 50 years of experience in the field of electro-magnet construction. Dings has supplied more foundries with magnetic separators than any other firm. When you need a lifting magnet check the DINGS.

Write for catalog B-1401-A giving construction details, capacities, ratings and dimensions.

DINGS MAGNETIC SEPARATOR COMPANY
4710 W. Electric Ave., Milwaukee 46, Wis.

Dings Magnets

LM-3

ACCURACY

STRENGTH

RIGIDITY

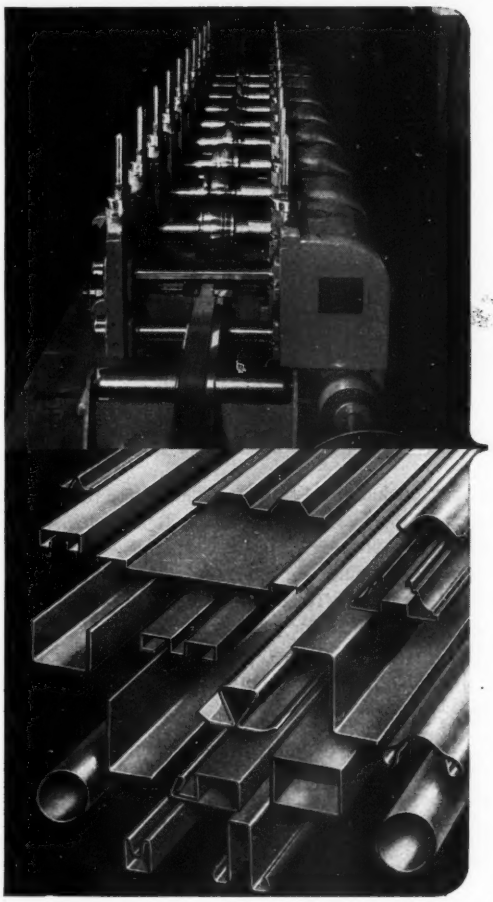
FINE FINISH

LIGHT WEIGHT

HIGH PRODUCTION

COLD-ROLL-FORMING

Gives you all, at lower cost—



● In busy metal working plants, vigilant production men are constanly on the lookout for places where, due to increased demand for their products, the time is ripe for a change of methods and equipment. They know, for instance, that in the shaping of metals into finished products or components, cold roll forming, when it can be employed, has many important quality and cost advantages over all other methods. When and how to make the change then becomes their problem.

In some instances, by a redesign of product, it becomes possible to profit by the advantages afforded by cold roll forming. In others, the mere need for higher production makes the change profitable. Again, redesign often leads to savings in weight which, in the case of the more expensive metals, alone may amount to more than the total conversion cost.

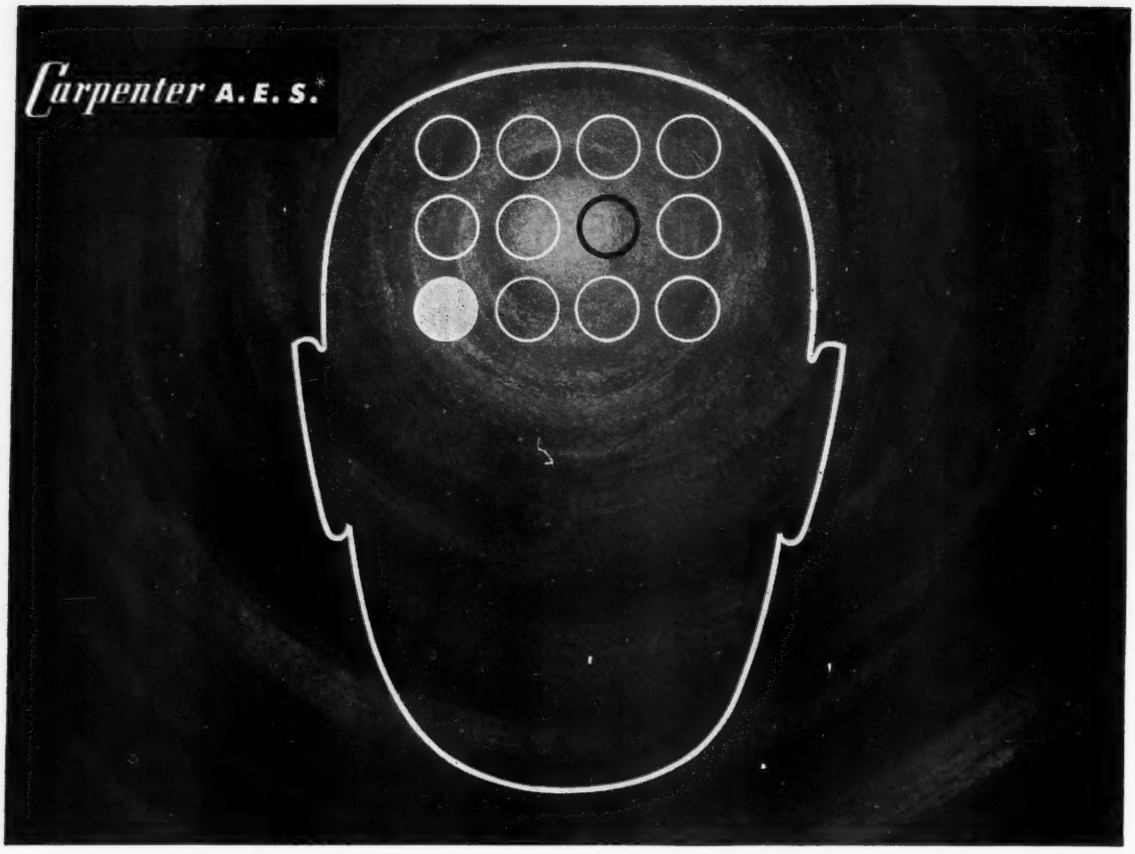
When such changes are indicated, feel free to avail yourself of the Yoder engineering service in analyzing and determining practicability of the change, choice and cost of equipment, and other pertinent questions.

THE YODER COMPANY
5502 Walworth Avenue • Cleveland 2, Ohio

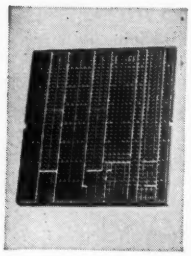
Complete Production Lines

- ★ COLD-ROLL-FORMING and auxiliary machinery
- ★ GANG SLITTING LINES for Coils and Sheets
- ★ PIPE and TUBE MILLS—cold forming and welding

ENGINEERING YODER MANUFACTURING



Building a Brain that Makes a Machine "Think"



*Another example of how Carpenter *Application Engineering Service is working for industry*

Today's business, moving ahead at a fast pace, relies on modern business machines . . . equipment built with an almost uncanny ability to "think". And the design and building of components for equipment like this demand the best in imagination, detail . . . and materials. It's an interesting story. Just one example is the 9½" x 10½" electronic control panel shown at the left. Made from a plastic, it has 1,280 5/32" dia. holes, six 3/8" dia. horizontal holes for heating and cooling, plus eight 3/8" dia. tapped holes on the edge. Steel after steel was tried for the molds used to produce the plastic panel. All failed because they couldn't hold severe tolerances like the .0002" on centers of the 1,280 5/32" dia. holes. It looked like one of those "impossible" jobs . . . until Carpenter was called in and Application Engineering Service went to work. Result: They used Vega (Air-Tough), a non-distorting tool steel invented by Carpenter for just such critical jobs. Of all steels tried, Vega was the *only* one to provide the almost perfect hardening accuracy required for successful performance of this mechanical "brain".

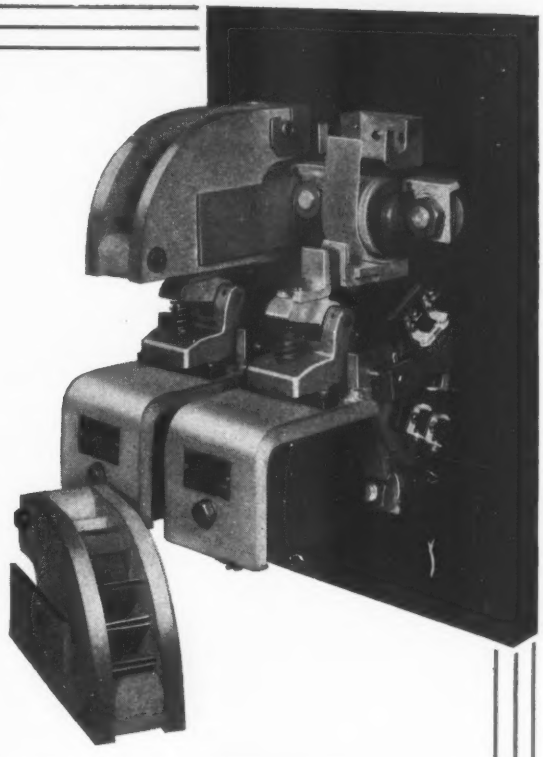
If Carpenter A.E.S. can work with other industries to help make possible the seemingly "impossible", it can do the same for you. Isn't it worth a try? A.E.S. goes to work as soon as you get in touch with your Carpenter Mill-Branch Warehouse or Distributor. THE CARPENTER STEEL CO., 139 W. Bern St., Reading, Pa.

Carpenter STEEL — Tool, Alloy and Stainless Steels

Pioneering in Improved Tool, Alloy and Stainless Steels Through Continuing Research

Developed

...with Steel Industry Cooperation



EXHAUSTIVE FIELD AND FACTORY TESTS have proved the remarkable durability of the new Type 260 DC Contactor. In the development of this heavy duty contactor, Allis-Chalmers engineers consulted and worked with steel mills . . . to meet their exacting requirements . . . to comply with their design preferences . . . *to assure you efficient, reliable performance under the most severe operating conditions.*

ALLIS-CHALMERS
Mill Type 260 DC CONTACTOR

Check these Advantages:

INCREASED CONTACT AND CHUTE LIFE — Contact erosion and chute carbonization are reduced by an entirely new and exclusive principle of arc interruption. Pronounced rolling action of the heavy forged copper main contacts minimizes destructive scuffing and extends contact life.

QUICK, EASY INSPECTION — Contacts are exposed for inspection by merely *lifting* arc chute. Each contact is held by a single screw. Auxiliary contacts are mounted on contactor frame in full view. Operating coil is supported by one bolt.

REDUCED MAINTENANCE — No field adjustments are necessary. Silver alloy auxiliary contacts need no dressing. Permanently lubricated *Oilite* bearings, running on stainless steel shaft, eliminate pivot oiling.

DESIGNED FOR EASY MOUNTING — As a replacement device, the Type 260 Contactor can be mounted on insulating panels from 1¼ to 1½ inches thick. No additional drilling is required for electrical interlocks, since they are mounted on the contactor frame.

Call your nearby A-C district office or write to Allis-Chalmers, Milwaukee 1, Wisconsin. Ask for Bulletin 14B6505A. A-3911

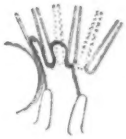
ALLIS-CHALMERS

NEW Fast Arc Centering Blowout

Arc Chute Assembly consists of triangular metal plates with U-shaped segments mounted alternately. Plates are insulated from each other and are placed at right angles to circumference of contact travel.

Metallic segments act as individual blowout coils.

Arc is forced upward along arc runner by blowout coil and impinges on metal segment of arc chute.



As contacts separate further, arc is stretched across an increased number of segments.

Arc rises quickly due to thermal and magnetic action of each individual metal segment.

You could know the plant . . . 20 years of steady growth . . . 20 years of work, brains and money . . . then in 20 minutes a little fire got away and reduced it all to nothing.

But, your larger size fire hazards can be protected very efficiently at a reasonable cost, thanks to C-O-TWO Low Pressure Carbon Dioxide Type Fire Extinguishing Systems. Simple piping, running from one centrally located storage tank, instantly transports clean, non-damaging, non-conducting carbon dioxide anywhere in the plant area . . . to flammable liquids, electrical equipment, storage spaces, manufacturing processes and record vaults. Fire at any protected location is extinguished in seconds with an absolute minimum of expense and interruption.

Flexibility is the keynote with these C-O-TWO Fire Extinguishing Systems . . . the low pressure carbon dioxide storage tanks range in capacities from one to fifty tons . . . discharge facilities can either be manual mechanical, manual electric, automatic mechanical, automatic electric or a combination of these . . . especially installed to fit your particular needs. Future plant expansion is easily and economically provided for by initially installing an oversized low pressure carbon dioxide storage tank and adding the supplementary discharge facilities at a later date.

Whether it's fire detecting or fire extinguishing . . . portables or built-in systems . . . C-O-TWO means experienced engineering that assures you of the best type equipment for the particular fire hazard concerned.

WHEN BUSINESS STOPS . . , INCOME STOPS!
Don't take chances with your investment. Secure the benefits of highly efficient fire protection engineering today . . . our extensive experience over the years is at your disposal without obligation. Get the facts now!

C-O-TWO

MANUFACTURERS OF APPROVED FIRE PROTECTION EQUIPMENT
Squeez-Grip Carbon Dioxide Type Fire Extinguishers
Dry Chemical Type Fire Extinguishers
Built-In High Pressure and Low Pressure Carbon Dioxide Type Fire Extinguishing Systems
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Sales and Service in the Principal Cities of United States and Canada
AFFILIATED WITH PYRENE MANUFACTURING COMPANY

Major Tin Plate Producer Steps Up Production 15% Using PALMOSHIELD

Sets production records using domestic Palmoshield in place of imported palm oil

After tests covering a number of years, a leading steel company adopted Palmoshield as a replacement for palm oil in cold rolling operations. Recently over a run of 20 consecutive shifts, production was stepped up 15% over the average output with imported oil. This increase was made with no additional investment, no increase in labor force, no extra machines and no changes in mill operation. Yet 115 tons of steel were rolled for every 100 before.

Two Mill-Tested Benefits

Actual mill experience in dozens of plants has proven these advantages of Palmoshield:

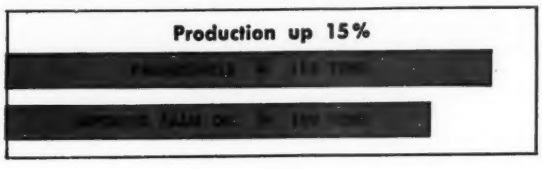
To Purchasing Agents. The price of Palmoshield is not artificially controlled. It rises and falls freely with the domestic fat market. Within the past year users have received several voluntary price cuts.

To Operators. Mill experience indicates that the use of Palmoshield improves production.

Palmoshield requires absolutely no changes in rolling mill operation.

Palmoshield makes steel quicker to gauge and shape.

Water break tests show that Palmoshield washes grease-free under conventional cleaning operations.



Quick Acceptance by steel producers

Nearly two-thirds of the major tin plate mills in this country and Canada are now using Palmoshield either in regular mill operations or for on-the-job-test runs. One company using Palmoshield for the first time was only 10 tons shy of the daily record. Another broke the single-shift record. And still another broke both 8-hour and 24-hour records.

4 Advantages of Palmoshield

Palmoshield is produced in the heart of the steel industry. Users are not dependent on overseas shipment.

Palmoshield is made from domestic materials freely available in sufficient quantities to supply all American steel production.

Palmoshield need not be stockpiled by the user, yet it does not deteriorate in storage.

Palmoshield is subject to exact chemical control. Free fatty acid content can be controlled to within ½%.

Can Palmoshield step up your production?

On request an Ironsides representative will give you facts on Palmoshield to help you set up a test program in your mill.

Palmoshield is available for same-day shipment in 55-gallon drums and tank car lots. For full information write The Ironsides Company, 270 West Mound Street, Columbus, Ohio.

SPECIAL LUBRICANTS and PRESERVATIVES

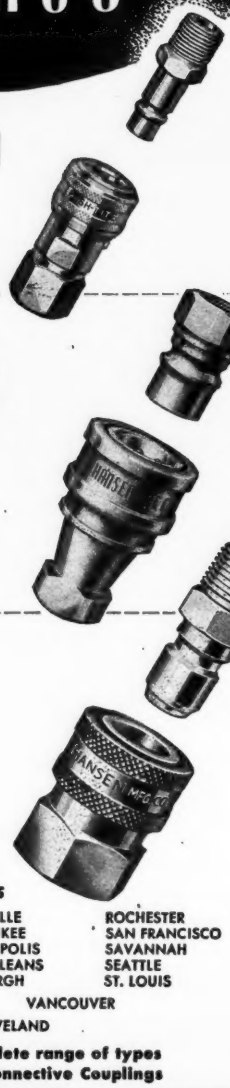
IRONSIDES SHIELD PRODUCTS **PALMOSHIELD**

IF YOU HAVE FLUID LINES TO CONNECT

YOU'LL SAVE TIME AND TROUBLE WITH

HANSEN

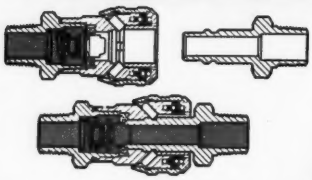
QUICK • CONNECTIVE COUPLINGS



HANSEN PUSH-TITE COUPLING

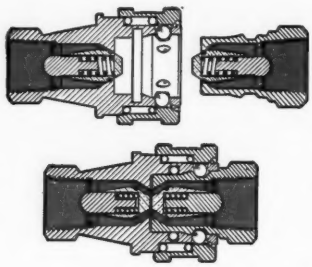
Shuts off one side of line

Gives quick connection and disconnection, with instant automatic flow or shut-off. To connect coupling, and open line to flow of fluid, merely push plug into socket. To disconnect, a slight pull on sleeve releases plug and shuts off supply end of line.



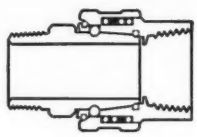
HANSEN HIGH PRESSURE TWO-WAY SHUT-OFF COUPLING

To connect, pull back sleeve and push plug into socket. Identical torpedo type valves permit free flow of gas or liquid through coupling. To disconnect, pull back sleeve..coupling immediately disconnects, valves automatically seal both ends of line. Can be mounted to disconnect automatically where fluid lines may be subject to sudden, damaging strain.



HANSEN STRAIGHT-THROUGH COUPLING

Provides quick connection and disconnection, but does not have shut-off feature. Size range for general use from ¼" to 2½". Two special types of straight-through steam couplings also available—one for low pressures, and one for high pressures.



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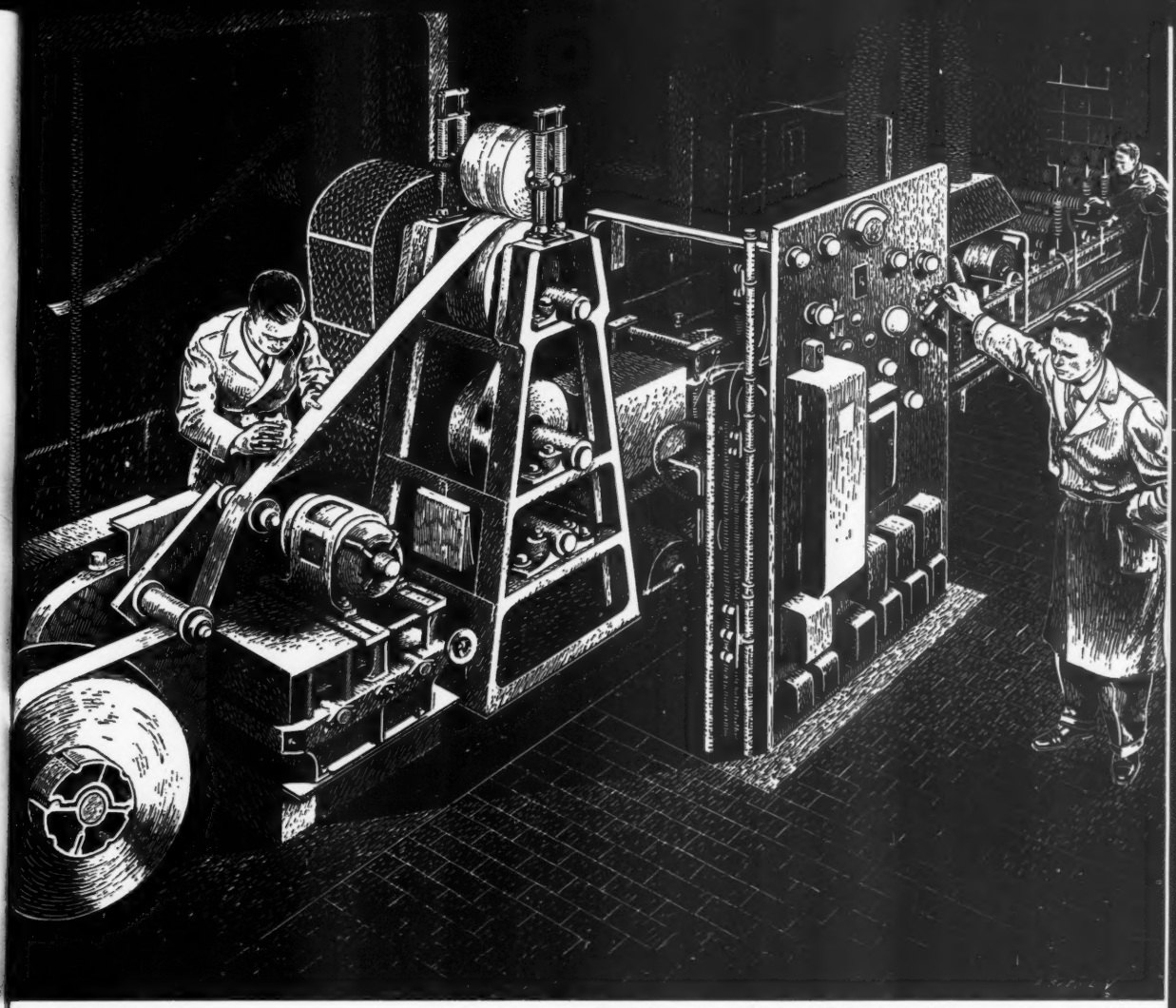

Pilot Electroplating Line

Scratchboard Drawing for Pittsburgh Steel Company by A. B. Sefcik

Progress in Steel—by Accelerated Research

Advanced methods of pre-coating strip steel with non-ferrous metals are born in the laboratory and developed on the pilot line shown above in the Thomas Strip Division of Pittsburgh Steel Company. By applying the accumulated knowledge and techniques of a quarter century of pioneering, Thomas engineers are continually solving special problems for many manufacturers by one of several methods of pre-coating cold-rolled strip steel.

The use of pre-coated Thomas Strip results in the elimination or reduction of plating costs—provides an inside-and-out quality finish—protects against corrosion—eliminates steps in process cycle—saves handling, preparation, and cleaning costs. Thomas Strip is pre-coated electrolytically with zinc, copper, brass, nickel, lead alloy, and chromium. It is also hot dip tin and lead alloy coated and lacquer coated in a variety of colors. If you use strip steel in your manufacturing operations, it will pay to investigate the savings possible with Thomas Strip.

The Thomas Strip Division was acquired by Pittsburgh Steel as a part of its Program of Progress which has as its objectives increases of 82% of finished product capacity and 50% in ingot capacity. The major steps in this $60-million program outlined below are designed to answer the universal demand for more steel to meet the growing needs of the defense program and to help promote our civilian economy as well.

Program of Progress

Acquisition of Thomas Steel Company	100% Complete
Installation of new 66-inch High Lift Blooming-Slabbing Mill	100% Complete
Increase of Blast Furnace Capacity by 12% Per Year	60% Complete
Increase of Open-Hearth Capacity by 50% Per Year	63% Complete
Installation of Continuous 66-inch Hot Rolled Sheet-Strip Mill	79% Complete
Installation of 66-inch Cold Rolled Sheet-Strip Mill	74% Complete

Pittsburgh Steel Company

Pittsburgh, Pennsylvania

BUILDING A GREATER AMERICA

Every dot on the draftsman's sketch has real meaning for the workmen in the boiler shop at Sun Ship as they assemble a tempering kiln 9' I.D. and more than 47 feet in length.

A newspaper humorist some years ago "defended" the efficiency man, saying that he could probably do a job as well as the next man "if you gave him time to doodle a ream of blueprints."

Well, there's always time for a chuckle, even in a plant as big and busy as Sun Ship. But there's also appreciation of the part the draftsman's "doodles" play in the good old motto of *Plan Your Work—Work Your Plan.*

Many a time in Sun Ship's 36 years of growing, good drafting has been the key to special service for the company's customers. A clearance drawing has revealed a way of speeding shipment by a change of route. A print has shown that parts of a piece of equipment being rebuilt could be made right in Sun Ship's versatile plant . . . and save valuable time.

And of course, even routine operations of draftsmen fit right into Sun Ship teamwork . . . for the drawing is a translation of facts into language readable by workers . . . and the "doodles" of structure, fittings, wiring, etc. have put a feather in Sun Ship's cap by helping speed the building of many a machine that helped build a greater America.

Sun

SHIPBUILDING & DRY DOCK COMPANY

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BROWNHOIST
finest, most modern CRANE . . . the result of 75 years of progressive engineering

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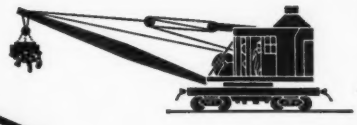
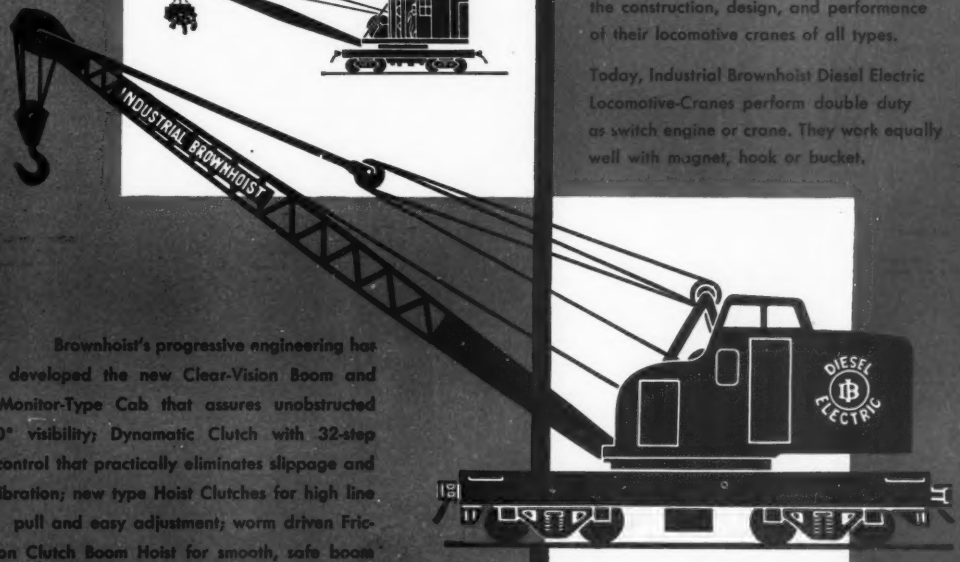


Even in 1877 the first little coal-fired Brownhoist cranes were known as the best locomotive cranes of their day. Every year since, Brownhoist engineering has constantly improved the construction, design, and performance of their locomotive cranes of all types.

Today, Industrial Brownhoist Diesel Electric Locomotive-Cranes perform double duty as switch engine or crane. They work equally well with magnet, hook or bucket.



1952

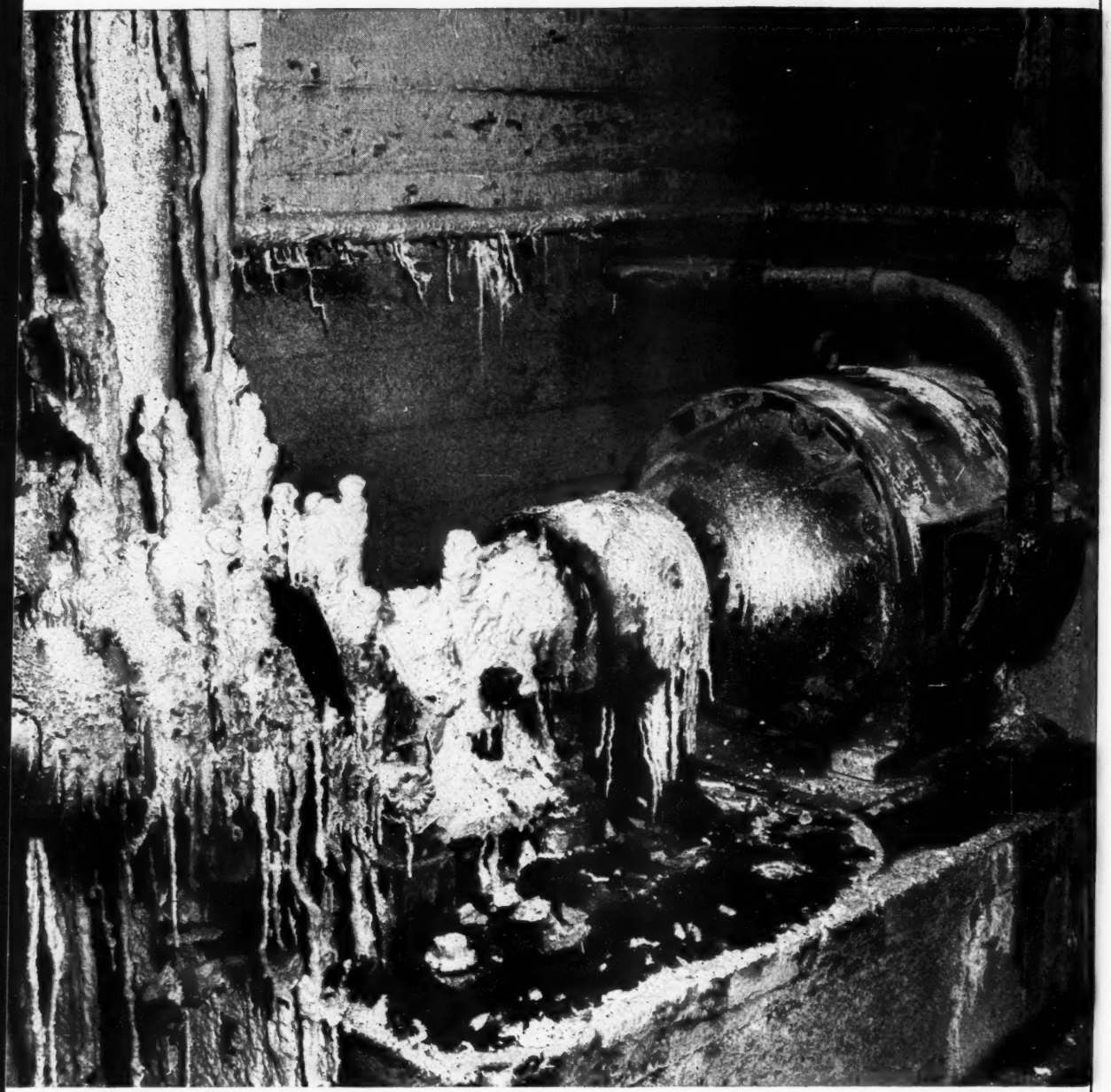
Brownhoist's progressive engineering has developed the new Clear-Vision Boom and Monitor-Type Cab that assures unobstructed 360° visibility; Dynamatic Clutch with 32-step control that practically eliminates slippage and vibration; new type Hoist Clutches for high line pull and easy adjustment; worm driven Friction Clutch Boom Hoist for smooth, safe boom operation. Optional features on Brownhoist cranes today include Dual Controls, 8-Wheel Chain Drive for increased drawbar pull, Twin Engine Drive for greater traction and Timken Roller Bearing Journals. Brownhoist Diesel-Electric Locomotive Cranes are available in capacities from 30 to 80 tons.

BROWNHOIST builds better cranes

INDUSTRIAL BROWNHOIST CORPORATION • BAY CITY, MICHIGAN • DISTRICT OFFICES: New York, Philadelphia, Cleveland, San Francisco, Chicago, Canadian Brownhoist, Ltd., Montreal, Quebec • AGENCIES: Detroit, Birmingham, Houston, Los Angeles

154

WHEN JOBS ARE TOUGH



CORROSIVE ATMOSPHERE doesn't bother this standard, "off-the-shelf" Tri-Clad motor. Totally enclosed, fan cooled, it runs 12 hours a day, six days a week, driving a flash cooler pump under tough conditions in a chemical plant.

GENERAL ELECTRIC

INDUSTRY DEPENDS ON G-E TRI/CLAD MOTORS

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Here are three typical tough jobs being done safely, economically, and without interruption, by G-E Tri-Clad motors. They help show why more than 10,000,000 horsepower of G-E Tri-Clad motors are serving American industry today.

WIDEST VARIETY

With the widest selection of standard motors obtainable anywhere, the Tri-Clad motor line offers ratings up to 2000 hp; all types of enclosures; gear motors, brake motors, and adjustable-speed drives—plus many other mechanical and electrical modifications to meet your requirements.

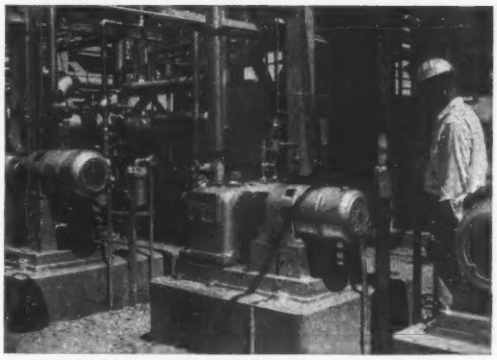
TRIPLE PROTECTION

You get triple protection with *every* Tri-Clad motor—against physical damage, electrical breakdown, and operating wear and tear. Completely enclosed bearings last longer because they can be relubricated if necessary—and *without shutdown!* For specific product information, use the coupon below, or contact your nearby G-E Apparatus Sales Office, authorized G-E Agent or Distributor.

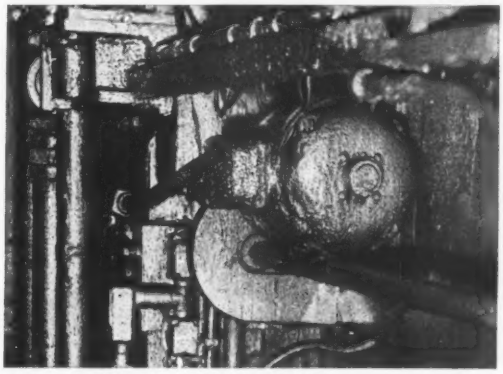
IMMEDIATE DELIVERY

Most standard G-E Tri-Clad motors are available immediately from stock. And the most complete sales and service network in the motor industry assures you prompt service by trained specialist and application engineers, for all your motor problems. General Electric Co., Schenectady 5, New York.

752-16



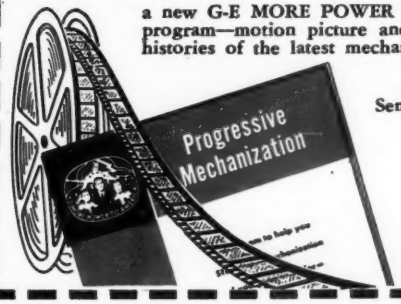
EXPLOSIVE ATMOSPHERE dangers are avoided by using standard explosion-proof Tri-Clad motors, such as these gear-motors driving water and hydrocarbon pumps in an oil refinery.



OIL, MOISTURE, ABRASIVE DUST can't stop this totally-enclosed Tri-Clad motor, operating below the strip in a cold strip steel mill. Motor is completely protected inside and out.

PROGRESSIVE MECHANIZATION . . .

a new G-E MORE POWER TO AMERICA program—motion picture and manual—case histories of the latest mechanization trends.



Send for literature.

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General Electric Co., Schenectady 5, N. Y.

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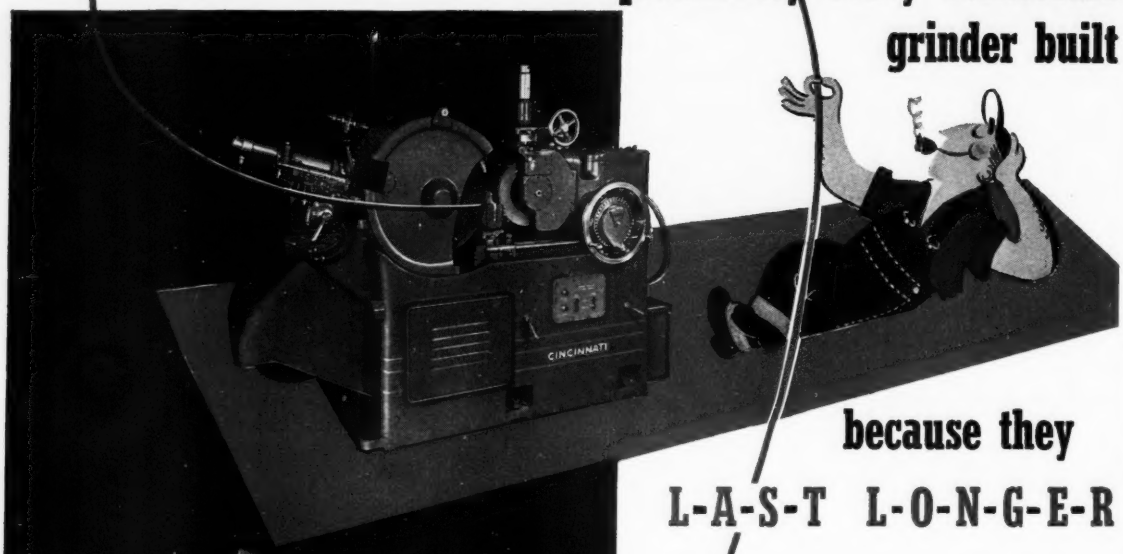

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The phenomenal long life of Ohio Centerless Work Blades and Guides is due to their extreme hardness, high finish and close tolerances. Long blade life means high production resulting in lower costs.

Made of tungsten carbide, high speed steel, cast alloys or iron. Non-metallic tips available upon request.

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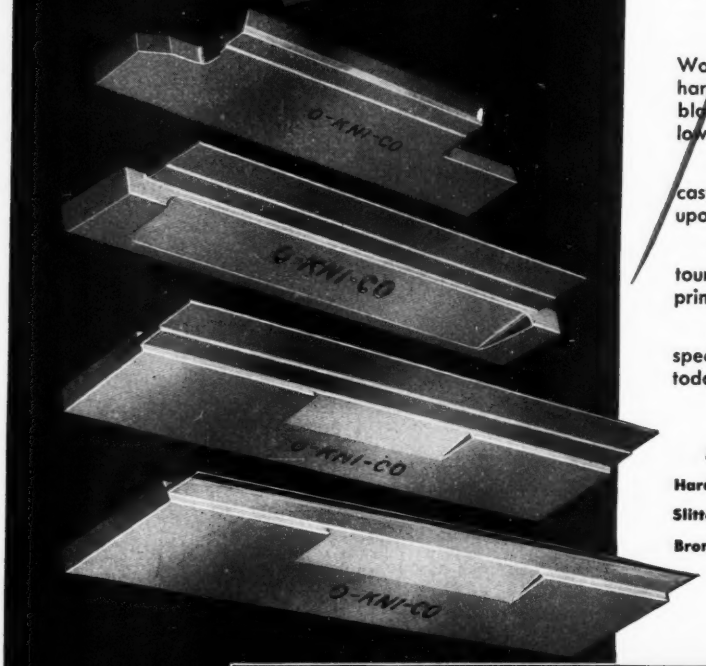

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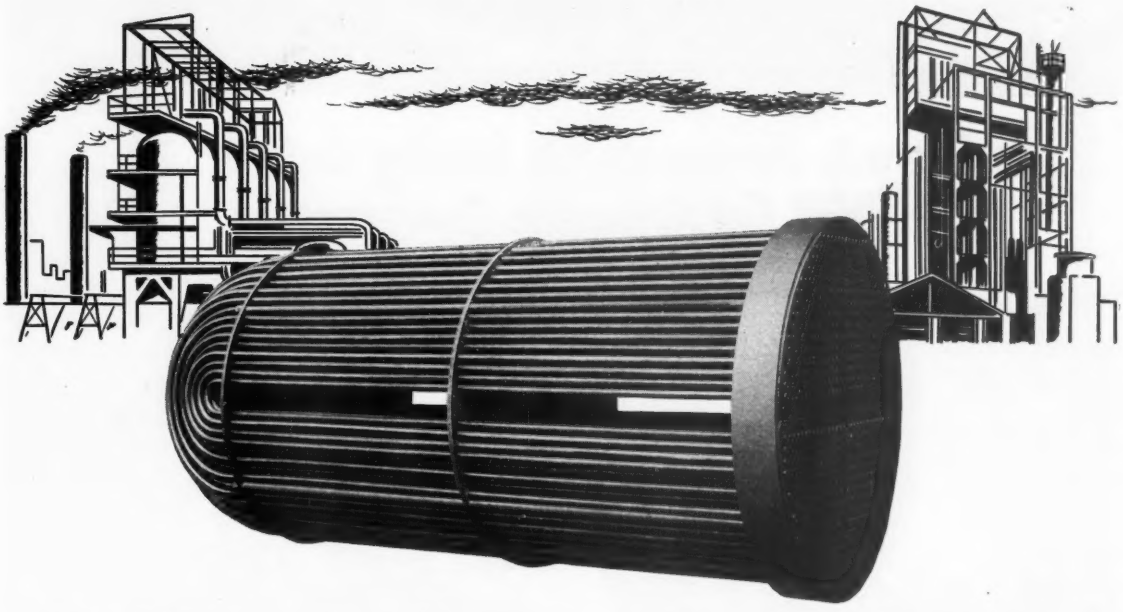

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Square: ¼" to 2" O.D.

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If you are cracking crude or reforming fractions . . . or using any process where condensers and heat exchangers are components . . . you need tubing of extra good quality—and in the West the best is Pacific.

Pacific has the mill . . . the engineering and metallurgical know-how . . . the modern equipment to produce cold-drawn seamless tubing; welded and drawn stainless steel tubing; welded carbon tubing in both the quality and quantity you need. Our position in the heart of the Western Industrial Area is an additional assurance—that we deliver on-time, every time.

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Find out more about Pacific Production and Service today. Clip and mail the coupon today for our newest tubing bulletin, or have our representative call to discuss your needs. No obligation in either case.

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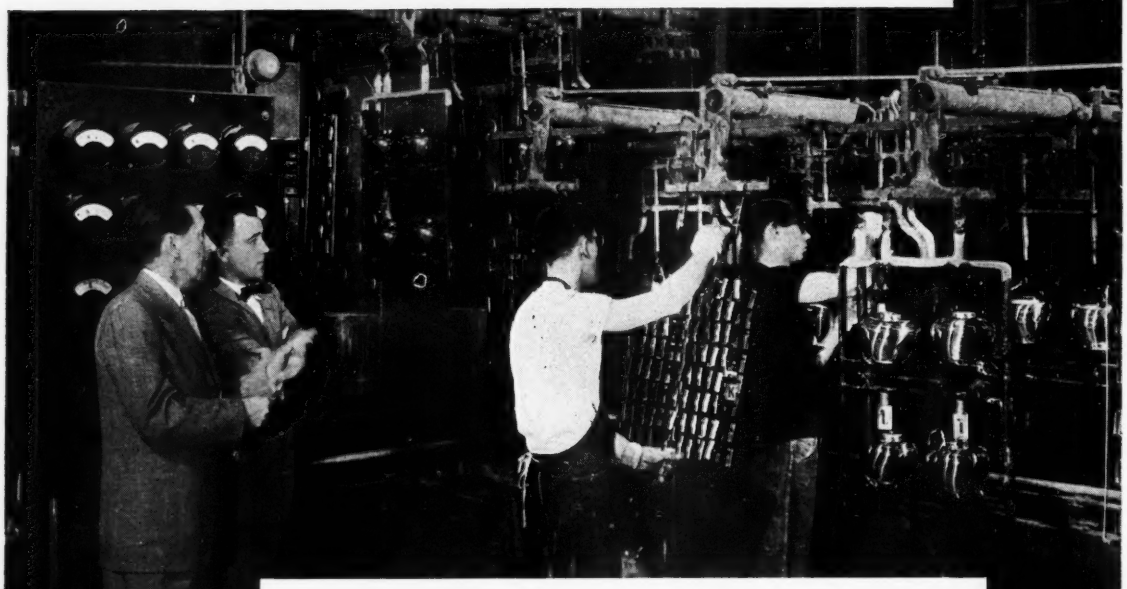
...and here is the double file loading feature of H-VW-M Full Automatic Conveyors



It's easy to see the advantages of this construction—double the capacity with the same machine. When less production is required only one rack is placed on each hanger arm—that's versatility, isn't it?

H-VW-M Full Automatic Conveyors are used daily for all types of plating—as well as anodizing, pickling, cleaning, phosphate coatings, bright dipping, painting, etching, and other finishing processes. They operate in a wide range of weight, current loads, and lifts. And they can be built with delayed set-down for varying immersion time, treatment by-pass mechanisms, air and solution agitation, racks with individual electrical control for each rack, or whatever special equipment the job requires—the ideal solution to problems of large quantity, high quality plating.

Full Automatic Conveyors are only one of many results of H-VW-M's more than eighty years of constant electroplating development. It's a continuous policy, best summed up in H-VW-M Platemanship...your working guarantee of the best that industry has to offer—not only in plating conveyors—but in every phase of plating and polishing.

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PLATEMANSHIP
PLATING & POLISHING
PROCESSES • EQUIPMENT • SUPPLIES

For complete information on H-VW-M Full Automatic Conveyors ask for Bulletin FA-103.

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Your H-VW-M combination—of the most modern testing and development laboratory—of over 80 years experience in every phase of plating and polishing—of a complete equipment, process and supply line for every need.

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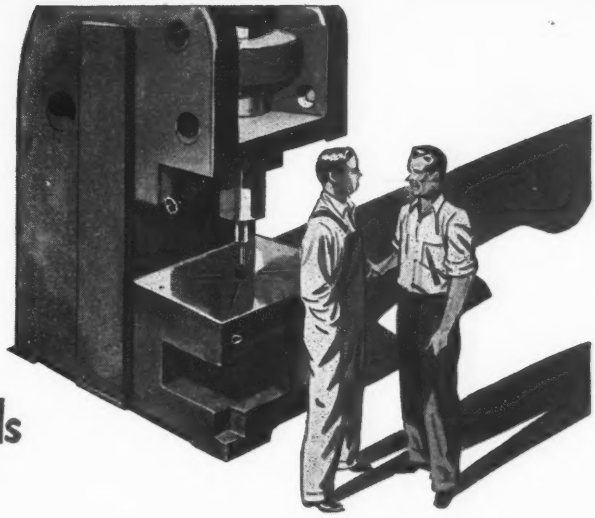


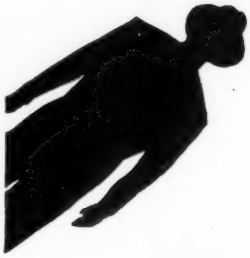
a few words about alloy steels

or... how your alternate steel problems can profit from a Republic Suggestion

Stumped by government restrictions on the alloy steel grades you've been using for years? Faced with the problem of working out machining and heat-treating procedures on alternate alloys... carbon or stainless steel?

Call in the Republic 3-Dimension Metallurgical Service. A Republic Field Metallurgist, backed up by the Republic Mill and Laboratory Metallurgists, will work with your metallurgist to make the switch to alternate alloys easier.

You will be working with the leading producer of alloy steels. We'll gladly use our experience to help you get all the benefits from the alloys now available.



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LINDE'S News of Metalworking

New Machine Carriage Saves Time On Many Jobs

A new machine carriage in the low-priced field does dozens of metalworking jobs—and does them more quickly, accurately, and uniformly than the most skilled hands. This machine, the OXWELD CM-45, handles practically all machine carriage requirements in small metalworking shops, and supplements heavier equipment in larger plants, shipyards, and mills.

Used on track, the CM-45 is ideal for accurate straight-line cutting. It also cuts top or bottom bevels at practically any angle. With standard radius rods, it cuts circles with diameters of from 2 to 54 inches. To cut larger circles, a longer radius rod can easily be substituted.

Flame-treating work—be it flame-hardening, flame-softening, or low-temperature stress relieving—requires precisely controlled heat. With the CM-45 and appropriate heating apparatus, you get just that; thus you can be sure that each of your flame-treating jobs will be done uniformly.

These are only a few of the jobs that the OXWELD CM-45 Machine Carriage will do for you. Many additional cutting, welding, and heating applications will be suggested by the requirements of your own shop.

The CM-45 saves you time, not only because it does each job efficiently, but also because it is so easy to set up and operate. There is no complicated machinery to master. Its simple design makes it easy to adjust or repair. All parts are readily accessible.

Operating controls consist of a speed-control dial that can be preset or adjusted at any time, and a two-position clutch lever. All controls are grouped together at the rear of the machine for your convenience.

Since the machine weighs only 33¼ lb. complete with cutting blowpipe (as shown in Fig. 1), it's an easy, one man job to move it from one section of your shop to another. The machine's compactness also makes it convenient for use in close quarters where larger machines cannot be used.

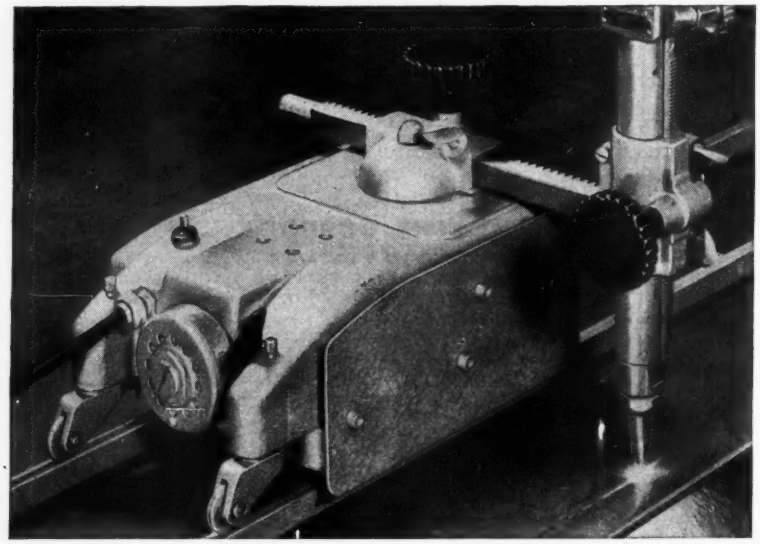

Fig. 1—Cut straight lines or bevels in plate or other steel forms. For all the CM-45's many jobs, a stepless speed range of 4 to 32 in. per min. is available.

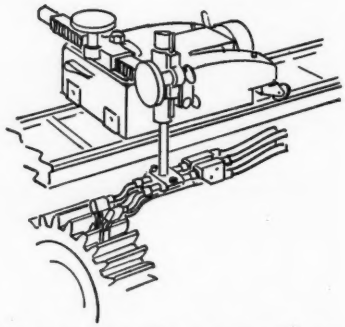

Fig. 2—Flame-treating work requires precise control of applied heat. The CM-45, with suitable apparatus, assures you of efficiency and uniformity on every job.

Any LINDE representative will gladly show you how the OXWELD CM-45 Machine Carriage will help you turn out more work in less time. Call the nearest LINDE office today for a free demonstration.

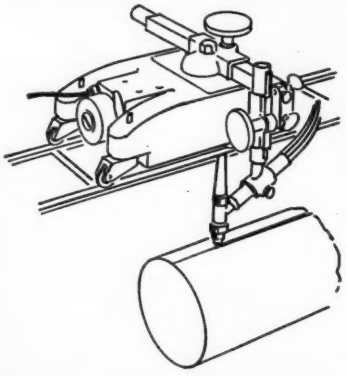

Fig. 3—Do special welding jobs, such as tube fabrication, quickly with the CM-45. Rejects are reduced to a minimum.

The terms "Linde" and "Oxweld" are registered trade-marks of Union Carbide and Carbon Corporation.

LINDE AIR PRODUCTS COMPANY
A Division of Union Carbide and Carbon Corporation
30 East 42nd Street UCC New York 17, N. Y.
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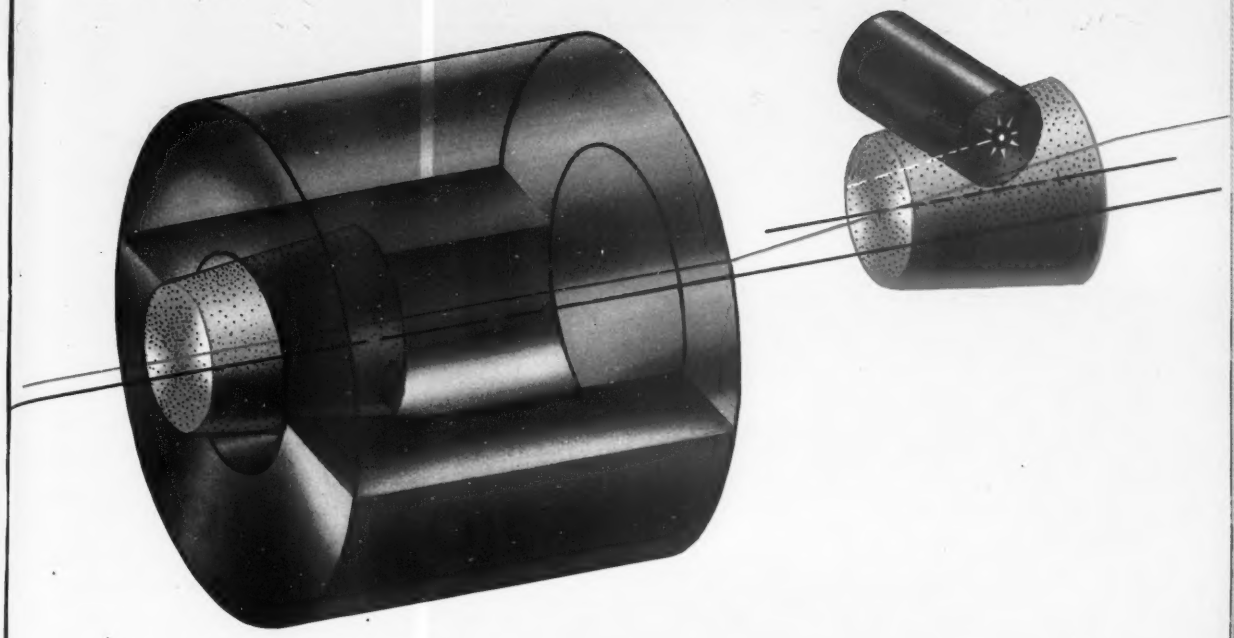


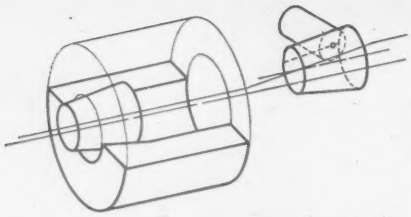
bryant
internal grinding

IT is common assumption in internal grinding that once the grinding wheel passes the diamond, all errors will be eliminated and the wheel will be a perfect cylinder. It is also assumed that this grinding wheel can produce a straight hole. These two assumptions are true only if the wheel path is a straight line parallel with the axis of the wheel as it passes the diamond and traverses the work.

In the illustration, the wheel slides are badly worn and the wheel path is not a straight line. The distortion in the ways causes the wheel to move gradually away from the diamond and the wheel is dressed to a taper as it passes the diamond. Then, as the tapered wheel traverses the work, it will grind only on its large diameter. At the point of reversal the tapered form will be transferred to the work. If the traverse stroke is lengthened, the tapered section will be moved to the new point of reversal. In addition, wheel wear will be excessive, finish will be poor, feed lines may be visible.

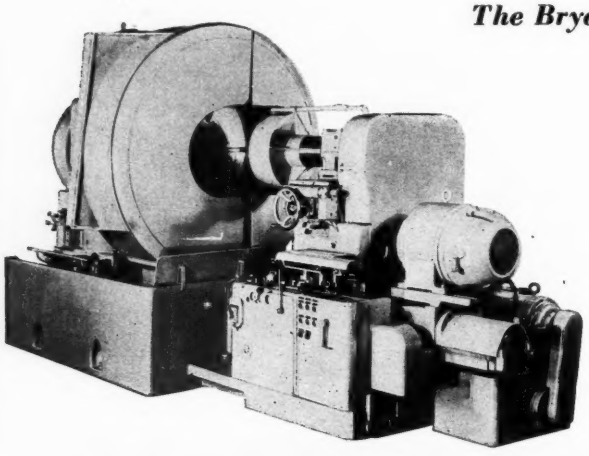
Available information advises simply turning the workhead or changing the length of traverse to correct taper. In the case illustrated, neither turning the workhead nor changing the length of traverse will produce a straight hole. The only possible remedy is to straighten the wheel slide ways which will, in turn, straighten the wheel path. The wheel will then contact the work properly, producing correct geometry of the hole, longer wheel life and better finish.

Bryant Chucking Grinder Co. Springfield, Vermont



bryant
internal grinding

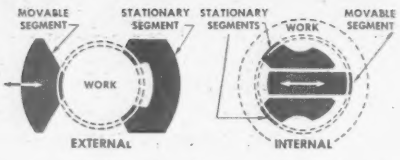
Accurate alignment of various machine elements is a basic consideration on even the simplest machine tool. Industry's demand for increased production and accuracy makes the alignment problem more critical than ever before. Bryant machines are designed so that they may be aligned, and this alignment may be maintained throughout the life of the grinder. Alignment and its effect on precision hole grinding is discussed on the preceding page.



The Bryant 1460 Hydraulic Hole Grinder

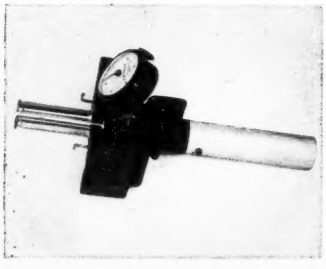
THIS massive machine will swing work up to 60″ diameter. Distance between workhead to front of work slide is 24″ minimum and 44″ maximum. The workhead will travel 16″ forward, or 14″ back of machine center to facilitate grinding large bores or faces. The full 60″ swing can be had when the workhead is adjusted to 30° for grinding a 60° included angle. Long work may extend back through 9″ spindle bore. Hydraulic controls make the 1460 easy and convenient to operate. Write for full information.

Bryant Chucking Grinder Co., Springfield, Vermont, U. S. A.



bryant
thread gaging

Bryant gages are built on the principle of an "expanding" master plug for checking internal parts, or a "contracting" master ring for checking external threads. A dial indicator gives a reading of P.D. which includes variation in thread form and lead. This is an accurate indication of assembleability.



The Bryant P-11 Portable Thread Gage

THIS is basically a split plug gage, equally effective for bench inspection or for gaging internal threads on parts still held in the machine, or in large work that is difficult to move to the inspection department. *4 to 5 times faster than plug gaging!* Standard range is 5/16″ to 4¾″ P.D. Write for catalog describing full line of Bryant Thread Gages.

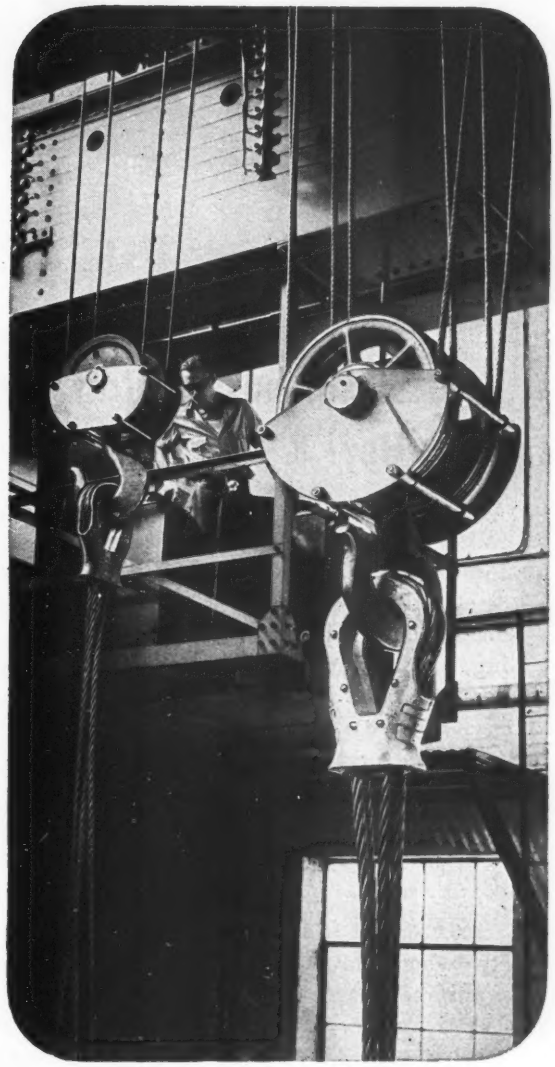
WIRE ROPE

This is the most efficient rope we've ever made for industrial service

JUST MENTION wire rope and most everyone thinks of Roebling. For one thing, Roebling made the first wire rope in America. But what counts more, we've always set the pace in developing better wire and better rope for the needs of every branch of industry.

Today's Roebling Preformed "Blue Center" Steel Wire Rope is industry's best bet for all-around efficiency and long life. It helps you get continuous production and stands up under rough going. It saves you time and cuts costs.

There's a Roebling wire rope of the right specification for top service on any job. Call on your Roebling Field Man for his recommendations. John A. Roebling's Sons Company, Trenton 2, New Jersey.



ROEBLING

ATLANTA, 934 AVON AVE • BOSTON, 51 SLEEPER ST • CHICAGO, 5525 W. ROOSEVELT RD • CINCINNATI, 3253 FREDONIA AVE • CLEVELAND, 13225 LAKEWOOD HEIGHTS BLVD. • DENVER, 4801 JACKSON ST • DETROIT, 915 FISHER BLDG • HOUSTON, 6216 NAVIGATION BLVD • LOS ANGELES, 5340 E. HARBOR ST • NEW YORK, 19 RECTOR ST • ODESSA, TEXAS, 1920 E. 2ND ST • PHILADELPHIA, 230 VINE ST • SAN FRANCISCO, 1740 17TH ST • SEATTLE, 900 1ST AVE S. • TULSA, 321 N. CHEYENNE ST • EXPORT SALES OFFICE, TRENTON 2, N. J.

36 Standard ... the "TRAVEL" ...

One of four Standard wheels on the 10-ton capacity bucket trolley.

... designed, fabricated and erected by Heyl & Patterson, Inc. for Weirton Steel

Newly completed by Heyl & Patterson, Inc. of Pittsburgh, Pa., for Weirton Steel, this 10-ton capacity, *traveling* man-trolley ore bridge, used for stocking, transferring and reclaiming iron ore, is a basic implement to modern blast furnace operation.

Operating around-the-clock, seven days a week, this mobile structure must necessarily be rugged and dependable to stand the rigorous conditions of continuous steel plant operations.

And serving in a really tough capacity—where the physical properties to withstand stresses and strains are all important—are thirty-six Standard Steel wheels. The travel of the entire bridge, as well as the travel of the trolley with the bucket depends on the performance reliability of these quality wheels.

Meeting the test of such severe service conditions, is nothing new for Standard Steel Works products. Starting with steel produced in Standard's own open hearth furnaces, where the most rigid control can be maintained, wheel blanks are produced free from flaws ... completely uniform in structure ... with close dimensional tolerances.

All of which means that at Standard Steel Works, you get the *performance, reliability* and top-notch *quality* that will safeguard the reputation of your products. You'll find Standard an ideal supplier—big enough to handle almost any job, yet small enough to make each job a matter of individual concern.

BALDWIN BLH LIMA-HAMILTON

STANDARDIZE ON STANDARD for

GEAR BLANKS

STEEL CASTINGS

FORGINGS

WELDLESS RINGS

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BALDWIN-LIMA-

Philadelphia 42, Pa. • Offices in Principal Cities

d Steel Wheels put
L" in this giant ore bridge

Traveling ore bridge, built by Heyl & Patterson for Weirton Steel, stockpiling iron ore for blast furnaces.

One of four truck mounted vertical bridge "legs" with Standard Steel wheels.

Standard Steel Works Division
Burnham, Pennsylvania

A-HAMILTON

From hot slag to heat treatment...
LUMNITE* saves time, cuts costs

CONSTRUCTION TIME SAVED HERE: Inland Steel Company, Indiana Harbor, Ind., made fast work of slag-pit retaining walls above. Three sets of walls, 500 feet long, resist heat in pits where hot slag is dumped and broken up with huge weights. Concrete made with Lumnite Cement is simply poured in place behind steel piling . . . *reaches service strength in 24 hours or less.* For speed, you can't beat simple monolithic concrete construction with time-saving Lumnite Cement!

OPERATING COSTS CUT HERE: Before the Attalla (Ala.) Pipe and Foundry Co. could use lift trucks for bringing scrap to cupolas, they had to build a ramp that would endure the blazing charges dropped daily by cupolas on either side. At right is their solution—heat-resistant concrete made with Lumnite calcium-aluminate cement. Tough Lumnite-made floors help cut operating costs!

MAINTENANCE REDUCED HERE: 6 months was average life of car tops exposed to quick quenching from 1700° F. at St. Louis (Mo.) Steel Casting Company. But refractory concrete car tops made with Lumnite Cement, such as the one at right, have lasted for several years. Refractory concrete has low volume change to withstand severe thermal shock; takes heat to 2600°F. Helps cut maintenance in furnace and door linings, base pads, foundations and stacks as well.

FOR CONVENIENCE, you may prefer prepared castables (Lumnite Cement plus aggregates selected for specific temperature and insulation service—add only water). They're made by refractory manufacturers and sold through their dealers. For more information, write, Universal Atlas Cement Company (United States Steel Corporation Subsidiary), 100 Park Avenue, New York 17, N. Y.

*"*LUMNITE" *is the registered trade mark of the calcium-aluminate cement manufactured by Universal Atlas Cement Company.*

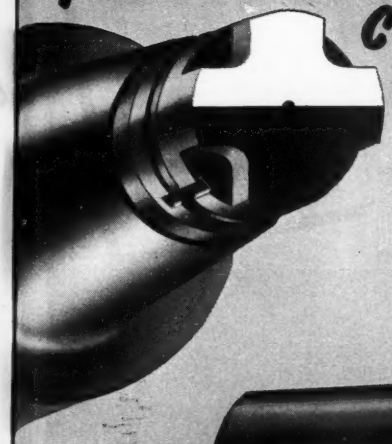
S-L-71

ATLAS® **LUMNITE for INDUSTRIAL CONCRETES**

REFRACTORY, INSULATING, OVERNIGHT, CORROSION-RESISTANT

"THE THEATRE GUILD ON THE AIR"—*Sponsored by U. S. Steel Subsidiaries—Sunday Evenings—NBC Network*

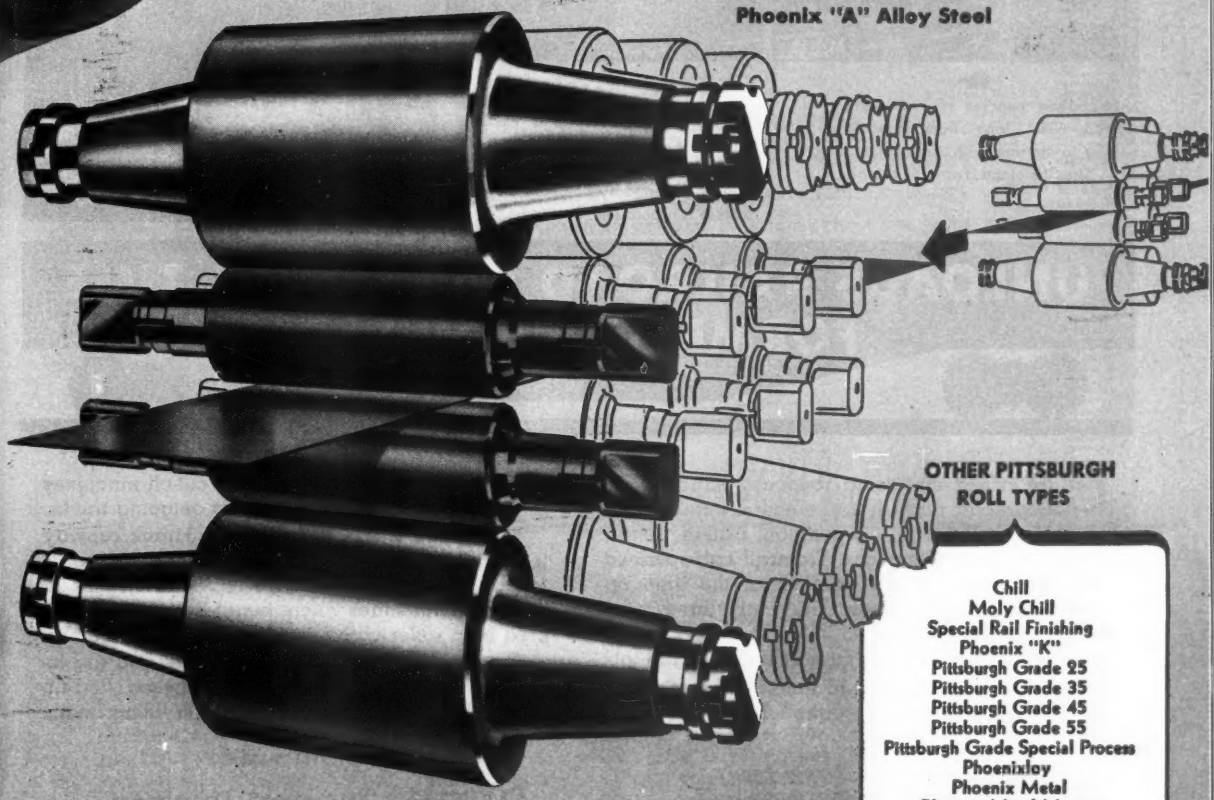
PHOENIX "A" Alloy Steel ROLLS are color marked for specific uses in rolling . . .



STRIP AND PLATE HOT MILL BACK-UP ROLLS

FINISHING MILL STANDS
Phoenix "A" Alloy Steel
Phoenix "A" Special Alloy Steel

ROUGHING MILL STANDS
Phoenix "A" Alloy Steel



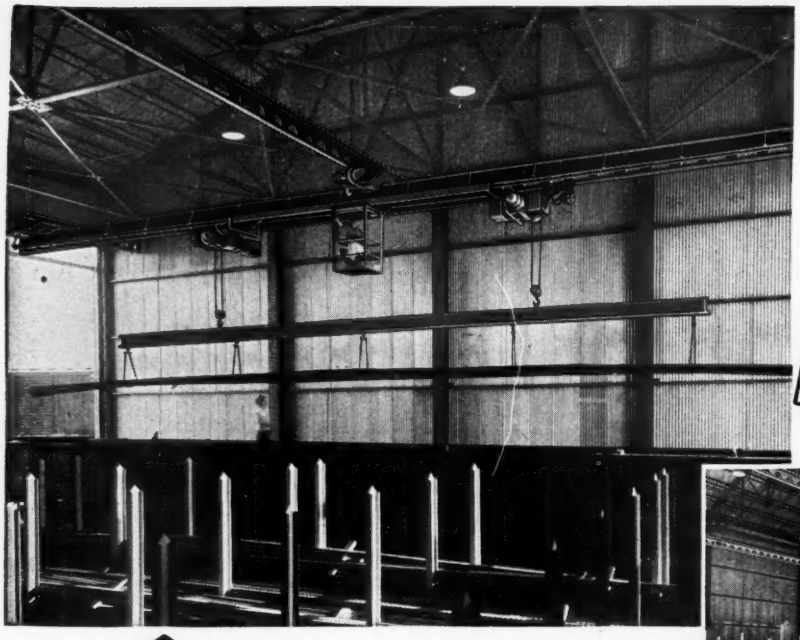
OTHER PITTSBURGH ROLL TYPES

Chill
Moly Chill
Special Rail Finishing
Phoenix "K"
Pittsburgh Grade 25
Pittsburgh Grade 35
Pittsburgh Grade 45
Pittsburgh Grade 55
Pittsburgh Grade Special Process
Phoenixloy
Phoenix Metal
Phoenix Metal Master
Carbon Steel

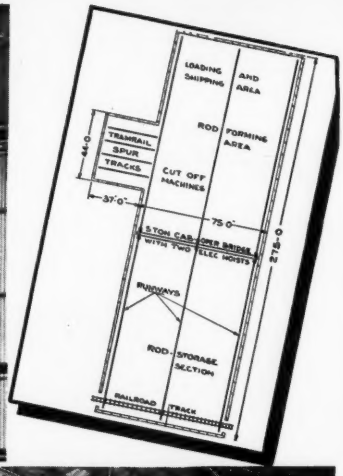
P.R.W.

PITTSBURGH ROLLS

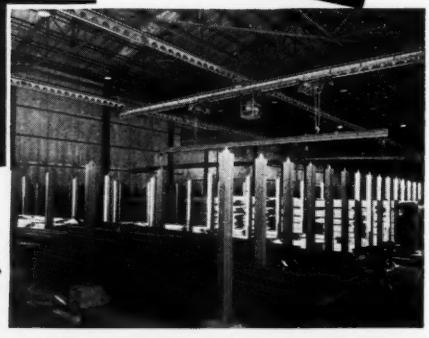
PITTSBURGH ROLLS DIVISION of BLAW-KNOX COMPANY • PITTSBURGH, PA.



Handling bundles of reinforcing rod 65'0" long from gondola car to storage with cab-operated 5 ton Cleveland Tramrail bridge.



The rod is quickly and easily handled by the overhead bridge in and out of this efficient storage area designed by Southern States Steel Corporation engineers.



UNLOADS RAILROAD CARS IN 5% TIME FORMERLY REQUIRED

CONCRETE reinforcing rods are handled out of railroad cars at the modern plant of the Southern States Steel Corporation, Dallas, Texas, to storage by a Cleveland Tramrail cab-operated transfer bridge in one-twentieth of the time required by hand methods. Thus only three man-hours are now required to unload a car, whereas it formerly took 64 to 96 man-hours to do the job.

Not only is time saved in unloading the incoming rod, but equally large time savings are made in delivering rod from storage to cut-off machines and in loading shaped rods onto outgoing trucks.

The bridge which travels on a 3-track runway is completely motorized, cab-operated and of 5 tons capacity. It interlocks with 4 spur tracks at the cut-off machines where bundles of rod are lowered onto roller conveyors serving the machines.

The two hoists have a lift of 24 feet and are located on the bridge with the cab between. Rod up to 65'-0" long is handled by use of a lifting beam.

GET THIS BOOK!

BOOKLET No. 2008. Packed with valuable information. Profusely illustrated. Write for free copy

CLEVELAND TRAMRAIL DIVISION
THE CLEVELAND CRANE & ENGINEERING CO.
7844 East 284th Street, Wickliffe, Ohio

CLEVELAND TRAMRAIL
OVERHEAD MATERIALS HANDLING EQUIPMENT

Aesop's Fable of

"The Eagle and the Crow"

carries a moral for Cutting Fluid users

The Fable . . .

A Crow, sitting on a fence post, watched a huge Eagle swoop down on a luckless lamb and carry it away. "That looks easy", thought the Crow, and straightaway tried to duplicate the Eagle's feat. Of course, he couldn't lift the lamb and, instead, got tangled up in its wool and couldn't get loose. The farmer came over, grabbed the Crow, and wrung its foolish neck.

The Moral . . .

Just as there was a big difference in abilities of, and results secured by, the Eagle and the Crow in the fable, so are there big differences in the abilities of basically different types of cutting fluids. Stuart Oil Co., recognizing this, does not attempt to apply a watermixed cutting fluid where a straight oil is needed, or vice versa. Some applications require a fluid with great *lubricity*, on others high *anti-weld* properties are necessary. All require *temperature regulation*, but always *more than a "coolant" is needed.*

Let your Stuart Representative demonstrate the opportunities for increased machining efficiency in your plant. Ask to have him call at your convenience.

More Than a "Coolant" is Needed

D. A. Stuart Oil Co.
EST 1865 LIMITED

TIME-TESTED CUTTING FLUIDS AND LUBRICANTS

2735-37 S. Troy St., Chicago 23, Ill.

Free! Dilut-o-graph

Circular slide rule makes dilution of cutting fluids quick, easy! For tanks of 1 to 100 gallons. Fill in coupon, clip to your company letterhead and mail to:

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Title .....

PITT CHEM Coatings really lick corrosion!

THERE'S hardly a structure or piece of equipment in your plant that won't serve you *better* and *longer* if it's protected with Pitt Chem Tar Base Coatings. No other material does such a complete job of protection at so little cost.

These tough, durable coatings will withstand years of exposure to a wide variety of atmospheric and chemical conditions, above or below ground. They're easy to apply, economical to use and provide a strong, adhesive film up to 10 times as thick as ordinary paints per coat.

Pitt Chem Coatings give you better protection because they're made by a *basic* producer and *quality-controlled* from coal to finished coatings. *If you have a corrosion problem, write or call for a Pitt Chem Coating Specialist today.* He'll be glad to make recommendations without cost or obligation.

PITT CHEM 101

A versatile, heavy duty coating that withstands severest corrosive conditions.

PITT CHEM 102

A thin, high gloss maintenance coating for steel and concrete surfaces.

PITT CHEM 103

A heavy duty coating for metal exposed to corrosive vapors, dilute acids and alkalis.

PITT CHEM 104

A fast drying, high gloss coating for equipment handling potable water.

WAD 4270

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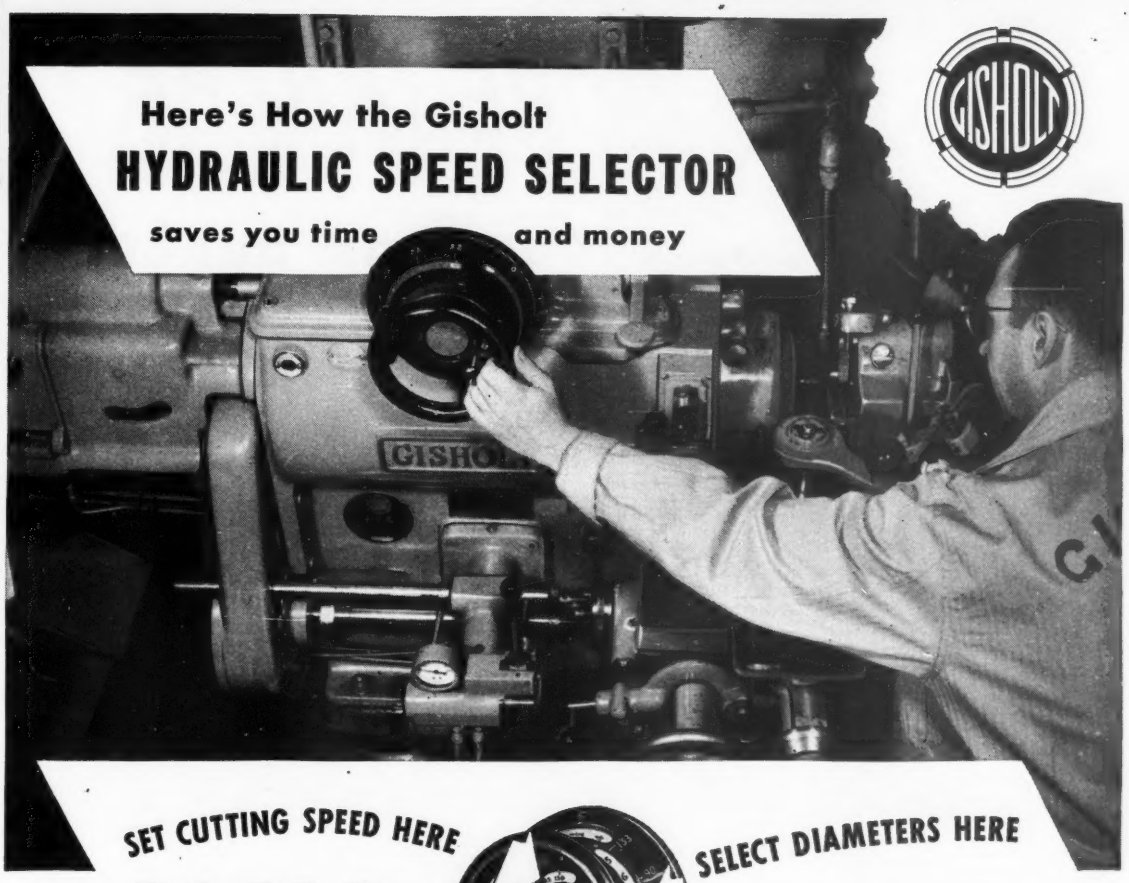

GISHOLT
Here's How the Gisholt
HYDRAULIC SPEED SELECTOR
saves you time and money
SET CUTTING SPEED HERE
There is a "best" cutting speed for machining with every combination of material and tool. Set that cutting speed here by turning the knurled ring.
SELECT DIAMETERS HERE
The operator merely turns the handwheel to the diameter of each successive cut. The Selector automatically shifts to the proper spindle speed.

Instant shifts to any one of 12 spindle speeds make it easy for the operator always to use the most efficient cutting speed. Reduces cutting time to a minimum with no time-wasting calculations and no physical effort.

Actuated by a mere touch to the wheel, the Speed Selector functions automatically, leaving the operator free to index the turret and present new tools to the work, thus reducing waste time between cuts. It's one of many features on Gisholt Turret Lathes that pay for themselves in a hurry.

GISHOLT MACHINE COMPANY
Madison 10, Wisconsin

THE GISHOLT ROUND TABLE
represents the collective experience of specialists in the machining, surface-finishing and balancing of round and partly round parts. Your problems are welcomed here.

TURRET LATHES · AUTOMATIC LATHES · SUPERFINISHERS · BALANCERS · SPECIAL MACHINES

HOW TO SQUEEZE MORE DOLLARS

OUT OF YOUR PRODUCTION BUDGET

THE GOULD PLUS-PERFORMANCE PLAN— A library of technical information that tells you how to select, charge, maintain and determine the condition of lead-acid batteries. It's free. Write Gould Battery Information Headquarters.

There are two sure ways to make your production dollars go farther:
1) Power your industrial trucks with Gould "Thirty" Batteries;
2) Maintain *all* your batteries, regardless of make, with the Gould Plus-Performance Plan described at the left.

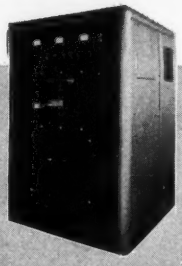
Here is complete assurance of maximum battery performance throughout longest possible service life. For real materials handling economy, take advantage of this cost-cutting combination . . . write for full information on Gould "Thirty" Batteries and the Plus-Performance Plan.

GOULD *Industrial Batteries*

GOULD-NATIONAL BATTERIES, INC., TRENTON 7, N. J.

Always Use Gould-National Automobile and Truck Batteries

DEPT. OF DEFENSE work . . . by *LINDBERG* Induction Heating Units



L. A. Young Spring & Wire Corp., Detroit, Mich., use two 5 KW Lindberg Induction Heating Units for production brazing, soldering, hardening, annealing, stress relieving, hot forming, forging or shrink fitting requirements.

We can't tell you much about the manufacturing processes at the L. A. Young plant (due to security restrictions) . . . but we can tell you about the many rugged construction features of this equipment . . . features which make it so dependable that the L. A. Young organization selected Lindberg Induction Heating Units for their important Department of Defense work. These points of design and construction will minimize costly breakdowns and aggravating work stoppages:

Filament voltage regulation transformers keep tube filament voltages at proper values regardless of line fluctuations. The end result . . . longer tube life.

Checklites . . . A system of indicating lamps instantly reveals any abnormal operating conditions . . . simplifies servicing.

Work coil burn-out protection . . . An electrical interlock system makes it impossible to turn on power when cooling water is not flowing.

Long-life industrial tubes feature shortened internal structure . . . Kovar metal-to-glass Seals . . . heavy walled anodes.

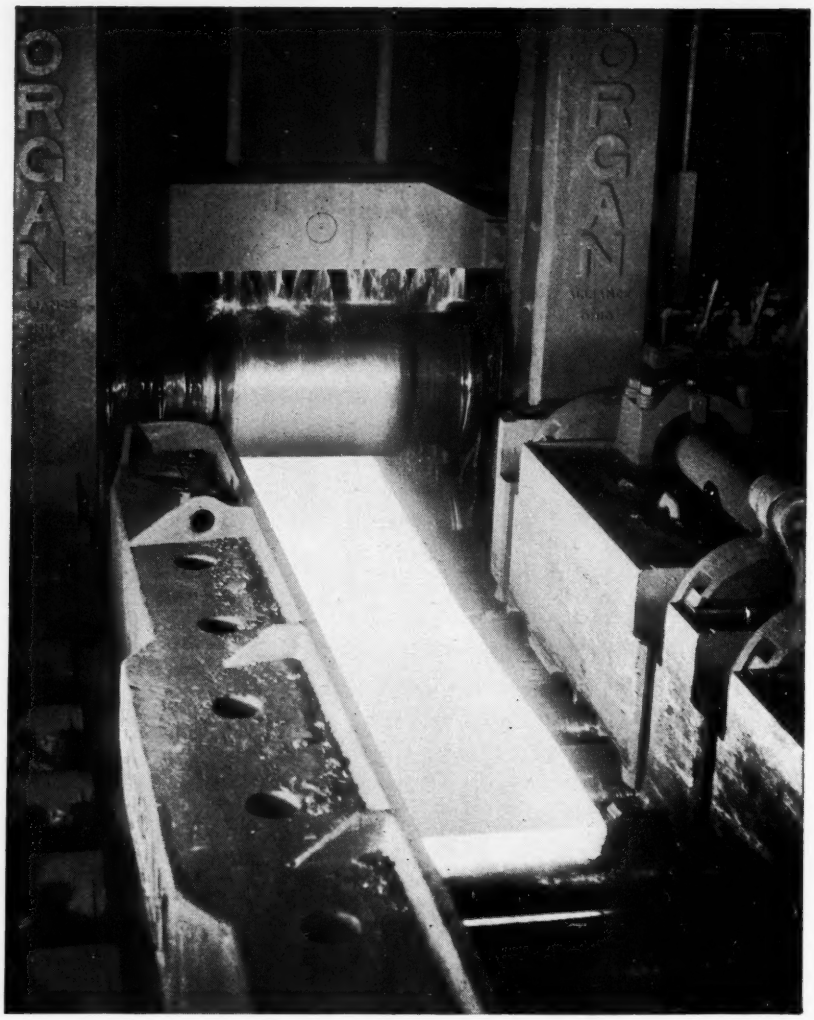
Sealed tank capacitors are hermetically sealed against dirt and dust . . . require no servicing or refilling.

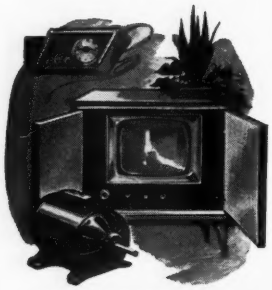
Investigate Lindberg Induction Heating Units. Ask for Bulletin 1440.

LINDBERG

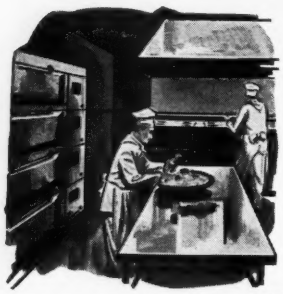
HIGH FREQUENCY DIVISION

LINDBERG ENGINEERING COMPANY,
2442 West Hubbard Street, Chicago 12, Illinois

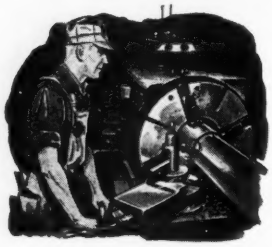




SPECIAL ELECTRICAL ALLOYS



CORROSION and HEAT-RESISTANT STEELS



TOOL and DIE STEELS

Coming at you —

One of the Royal Family of Steel

Our niche in the economic health of this nation in peace, and its defense in war, is to develop and produce the high-alloy steels and other special alloys which will do what ordinary metals cannot even approach in resisting corrosion, heat and wear, and in performing vital electrical and electronic chores. Whenever you have problems in these fields, the place to come is **Allegheny Ludlum Steel Corporation, Oliver Building, Pittsburgh 22, Pa.**

PIONEER in Specialloy Steels

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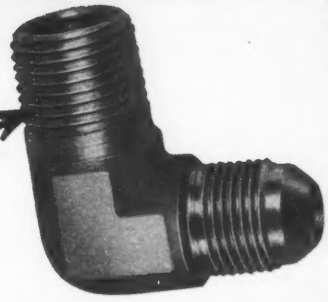
AL
TIME-TESTED STAINLESS STEEL

W&D 4092 B

STOP THIS



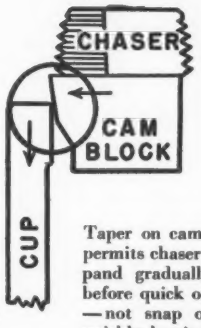
Get rid of these marks. They mean "leakers", these tell-tale trails left when the chasers release at the end of the cut on taper pipe threads.

Namco Vers-O-Tools now offer you an easy, economical cure—our exclusive development—

EXPANDING ACTION

which entirely eliminates this pipe thread defect caused by less precise threading heads.

Not only does this improved Namco design materially reduce costs—it enables you to attain high precision and smoothness on the better class of work previously thought to require thread grinding or rolling.



Taper on cam block permits chaser to expand gradually just before quick opening —not snap off too quickly, leaving a tell-tale mark.

USE NAMCO VERS-O-TOOLS TO GET

ACCURATE, SMOOTH PRESSURE TIGHT PIPE THREADS EVERY TIME

These new expanding-action Vers-O-Tools are available in both revolving and non-revolving styles, and are used with both Namco circular or adjustable blade chasers.

Get full details now—in complete new catalog covering Vers-O-Tool heads and collapsible taps. Ask for DT-52.

The NATIONAL ACME CO.

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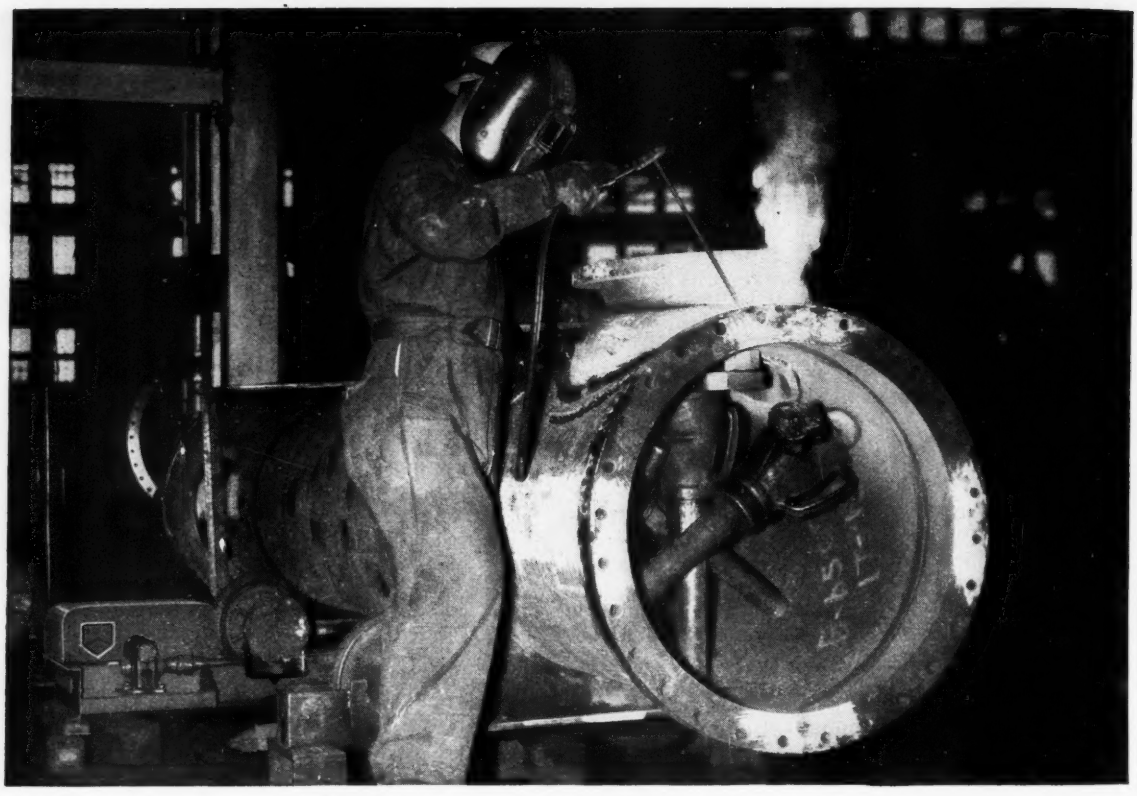
Acme-Gridley Bar and Chucking Automatics: 1-4-6 and 8 Spindle • Hydraulic Thread Rolling Machines • Automatic Threading Dies and Taps • The Chronolog • Limit, Motor Starter and Control Station Switches • Solenoids Centrifuges • Contract Manufacturing



This welder can weld up to 50% more than he used to!

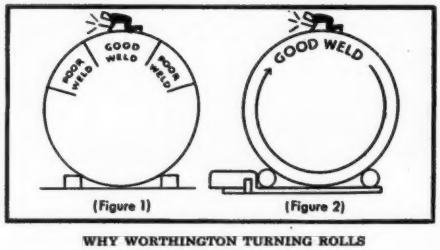
With Worthington turning rolls any welder can get better welds . . and turn out real footage

No problem to boost welding footage as much as 50% when you use Worthington Turning Rolls.

Previously the welder was forced to waste lots of time by having to crawl over cylindrical vessels, turn them by hand or wait for crane and hoist service.

With Worthington Turning Rolls at work his footage is soaring and he produces neater, stronger welds with less effort. Now, *power* turns the vessel at any selected welding speed as he quickly spots longitudinal seams or continuously welds circumferential seams.

To find out where you can see a nearby Worthington Turning Roll, just ask us. For more data, ask for Bulletin 228. Worthington Corporation, Plainfield, N. J.



(Figure 1) (Figure 2)

WHY WORTHINGTON TURNING ROLLS INSURE BETTER WELDS

Unless the work is turned continuously, good downhand welding is obtainable only in small area (Fig. 1). With a Worthington Turning Roll, downhand welding is assured for the complete circumferential seam (Fig. 2) as well as all longitudinal seams (either by manual or automatic welding).

Y.2.1

WORTHINGTON

Welding Positioners
Turning Rolls

The man with the Parker briefcase brings

37 Years' Experience

in metal surface treatment to you

FIRST in the field since 1915

● Only Parker has it! Experience gained in planning metal surface treatments in thousands of plants. Experience matured in meeting and solving problems of installation, application and performance day after day for 37 years. Experience enriched by a continuing research program of improvement and discovery.

In the Parker man's briefcase — and in the knowledge and skill of production, engineering, research, and testing staffs which back him up — are the answers that will mean savings and satisfaction for you when you need a metal surface treatment in your plant.

For rust control, paint base, wear resistance, metal cleaners, aids for drawing and cold extrusion, call in the man whose briefcase is packed with 37 years of success. Call Parker!

**Bonderite, Bonderlube, Parco, Parco Lubrite—Reg. U.S. Pat. Off.*

Parker
RUST PROOF COMPANY
2158 E. Milwaukee, Detroit 11, Michigan

BONDERITE—corrosion resistant paint base

BONDERITE AND BONDERLUBE aids in cold forming of metals

PARCO COMPOUND rust resistant

PARCO LUBRITE—wear resistant for friction surfaces

Enthone metal strippers

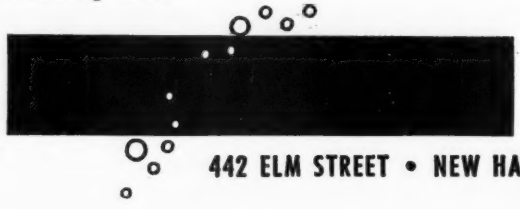
no attack on the base metal

strip in barrels, baskets or bulk... without electric current

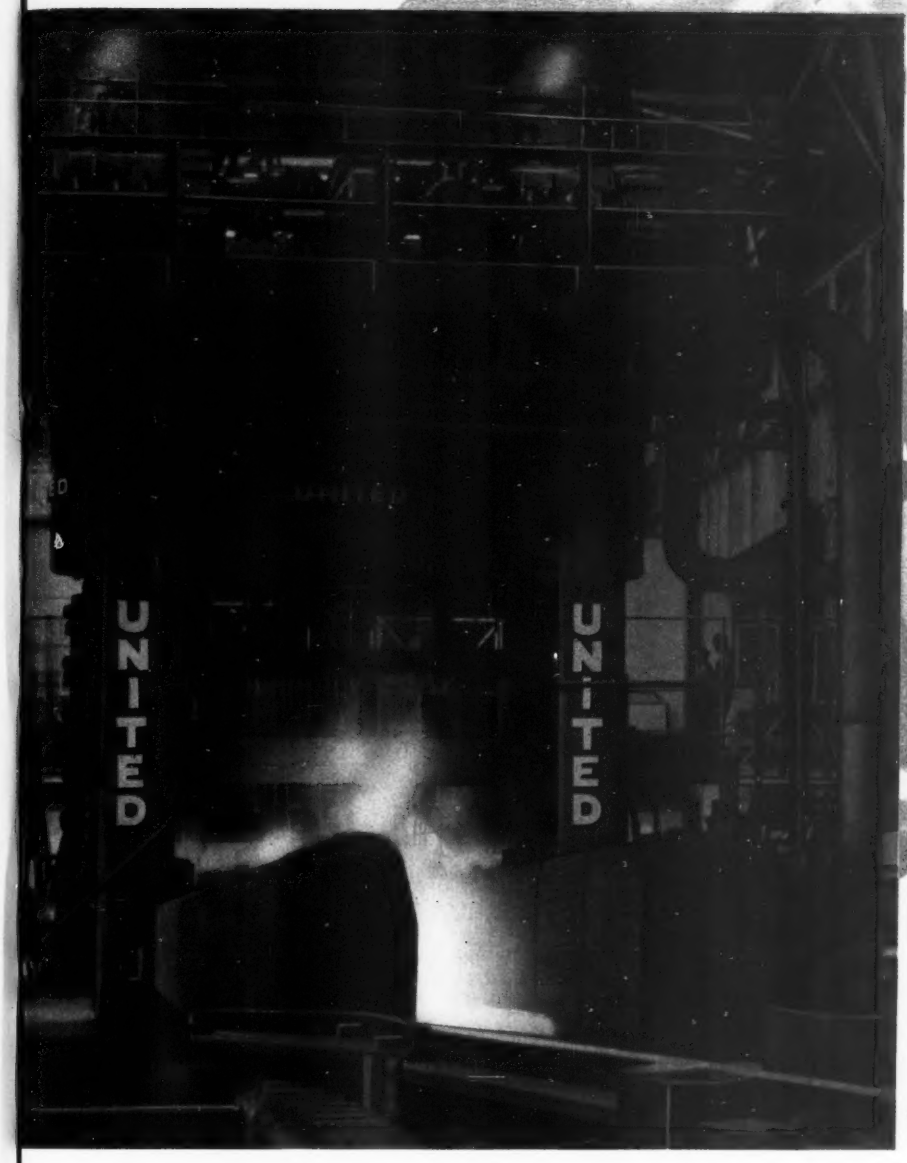
metal stripper A A new alkaline compound that chemically dissolves nickel, copper, zinc, cadmium and silver from steel without etching or attack. The steel is clean and ready for refinishing. Suitable for rack, basket or barrel stripping. Removes excess silver solder from steel rapidly. Patents pending.

metal stripper N-165S A compound added to acid solutions to promote rapid stripping of nickel, tin and lead coatings from copper alloys. No electric current is required.

WRITE FOR LIST OF SIXTY PRODUCTS AND PROCEDURES FOR METAL FINISHING



442 ELM STREET • NEW HAVEN, CONN.



45" X 115" SLABBING MILL

UNITED MILLS

the world over—
wherever steel is
rolled

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ENGINEERING AND FOUNDRY COMPANY

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Plants at: PITTSBURGH • VANDERGRIFT • NEW CASTLE • YOUNGSTOWN • CANTON

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STEDMAN FOUNDRY AND MACHINE CO., INC., AURORA, INDIANA

Designers and Builders of Ferrous and Nonferrous Rolling Mills, Mill Rolls, Auxiliary Mill and Processing Equipment, Presses and other Heavy Machinery. Manufacturers of Iron, Nodular Iron and Steel Castings, and Weldments.

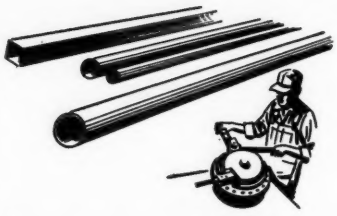
RYERSON

The Industrial P. A.'s Department Store

Here are a few of the many types of steel and related products on hand right now, ready for immediate shipment from your nearby Ryerson plant. Many may be used in place of products that are still hard to get. Check the items you need, and save time by ordering them next time you call Ryerson.

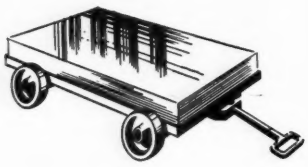
ALLOYS

Tested alloys of known hardenability, both standard and aircraft quality. Complete heat treatment guide with each shipment.



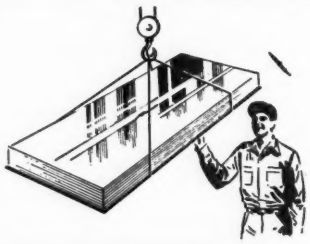
WELDED MECHANICAL TUBING

Hot and cold rolled, rounds and squares in a wide range of sizes. Consider cost. Substitute for seamless tubing.



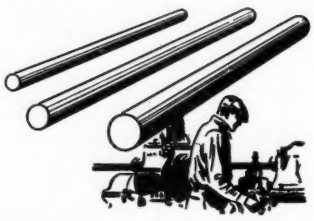
CARBON SHEETS

Both hot and cold rolled coming into better supply, especially cold rolled in the heavier gauges.



STRAIGHT CHROME STAINLESS

No allotment required for these stainless bars, plates and sheets—and they can often replace restricted nickel-bearing types.



TOOL STEEL

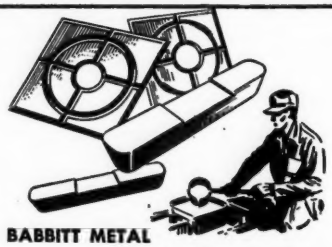
Water, oil or air hardening steel. High in quality; economical in price. Hardening data with every shipment.

SAFETY PLATE

Strong, non-skid Inland 4-Way Safety Plate protects feet against slipping, floors against wear. Easily fabricated.

CHAIN & WIRE ROPE

Rugged, dependable TM chain, iron, steel and alloy qualities, furnished to order. High quality wire rope shipped from large stocks.



BABBITT METAL

Glyco Babbitt, an exclusive Ryerson product, has physicals equal to high tin Babbitts; costs substantially less and is unrestricted.

RYERSON STEEL

JOSEPH T. RYERSON & SON, INC. PLANTS AT: NEW YORK • BOSTON • PHILADELPHIA • CINCINNATI • CLEVELAND • DETROIT
PITTSBURGH • BUFFALO • CHICAGO • MILWAUKEE • ST. LOUIS • LOS ANGELES • SAN FRANCISCO • SPOKANE • SEATTLE

December 8, 1952

The Labor Market Tightens

One of your toughest problems over the next few months will be the tightening manpower supply. Total civilian employment in November hit 62.2 million, a high for the month and about 1 million above the previous record November level. As a result, the Labor Department's Bureau of Employment Security transferred 13 areas from its list of surplus labor market centers to places with a balanced supply. Two of those centers are Detroit and St. Louis. Worse than ever this winter will be the shortage of engineers. For example, Illinois Institute of Technology has 140 potential candidates for degrees in January. Already 236 companies have filed with the institute that they have engineering jobs available.

Slowdown Strike Outlawed?

A National Labor Relations Board ruling in a case involving Phelps Dodge Copper Products Corp. has wide implications for industry. NLRB decided that wage discussions or other types of bargaining can be called off by an employer when a union starts a slowdown. Furthermore, employers are within their rights to fire or otherwise penalize employees who engage in slowdowns. The ruling could mean the end of the slowdown strike just as the sitdown technique of the 1930s was finally abandoned after a Supreme Court ruling.

Coming Up: More Motor Standards

On Nov. 12, NEMA approved a new suggested standard for open-type, 1800 rpm motors, 1 to 30 hp. Now, additional proposals will be studied to cover motors of other speeds and enclosures. This NEMA committee movement to rerate motors, under way since 1937, has the objective of giving users a better, more compact product and saving materials. On Oct. 20 this column inaccurately implied that General Electric was generally redesigning its motor products, asking NEMA to change its standards, and thus pressuring all motor manufacturers to use them. As with all NEMA-sponsored standards, these may be used freely by any motor manufacturer.

Renegotiation: Under Attack

Renegotiation "does not belong in the peacetime procurement picture." The paperwork now required in renegotiation is "far more burdensome" than during World War II. "The procedure to renegotiate military sales is too slow." Those are the three major complaints about renegotiation, as turned up in a survey by the National Industrial Conference Board. It's a matter that will be taken up with the new administration by business men.

New Faces in Labor Posts

Industry's considered reaction to the appointment of plumbers' union President Martin P. Durkin as Secretary of Labor is: Let's reserve judgment until the man has a chance to show what he can do. Only a

Production-Engineering News—p. 93 The Market Outlook—p. 163

minority of the metalworking executives interviewed by STEEL on the matter agreed with Senator Taft that the appointment was "incredible," although most admitted they were "quite surprised" . . . Not so surprising is Walter Reuther's election to the CIO presidency. Industrialists think him a dangerous man.

Riddle of Maintenance

First steps are being considered to solve the riddle of maintenance of what may be excess capacity. A list of 1500 plants, all privately owned but containing government equipment and turning out military end products, is now under study at ODM and the Bureau of the Budget. The idea is to find a way of assuring the maintenance of capacity with equipment in place. Watch for the answer to be some kind of an agreement under which Uncle Sam will pay maintenance costs.

Buick Steps Forward

Capacity to produce almost 50 per cent more Buicks than were built in the General Motors division's best year—1950—will be available when its present expansion program is finished in 1954. Then, it will be capable of building 750,000 cars a year . . . Buick's Skylark, a sports-type convertible being readied for introduction, will be priced fully equipped at less than $5500. The car differs from the prototype shown last summer in that its windshield and seat height will be lower, and it will have a 5-inch shorter wheelbase.

Ready To Go at Fairless Works

The first blast furnace at U.S. Steel Corp.'s big new Fairless Works will be fired Dec. 11. The first open hearth will be tapped the same day. Fairless will eventually add 1.8 million tons to U.S. Steel's annual ingot capacity.

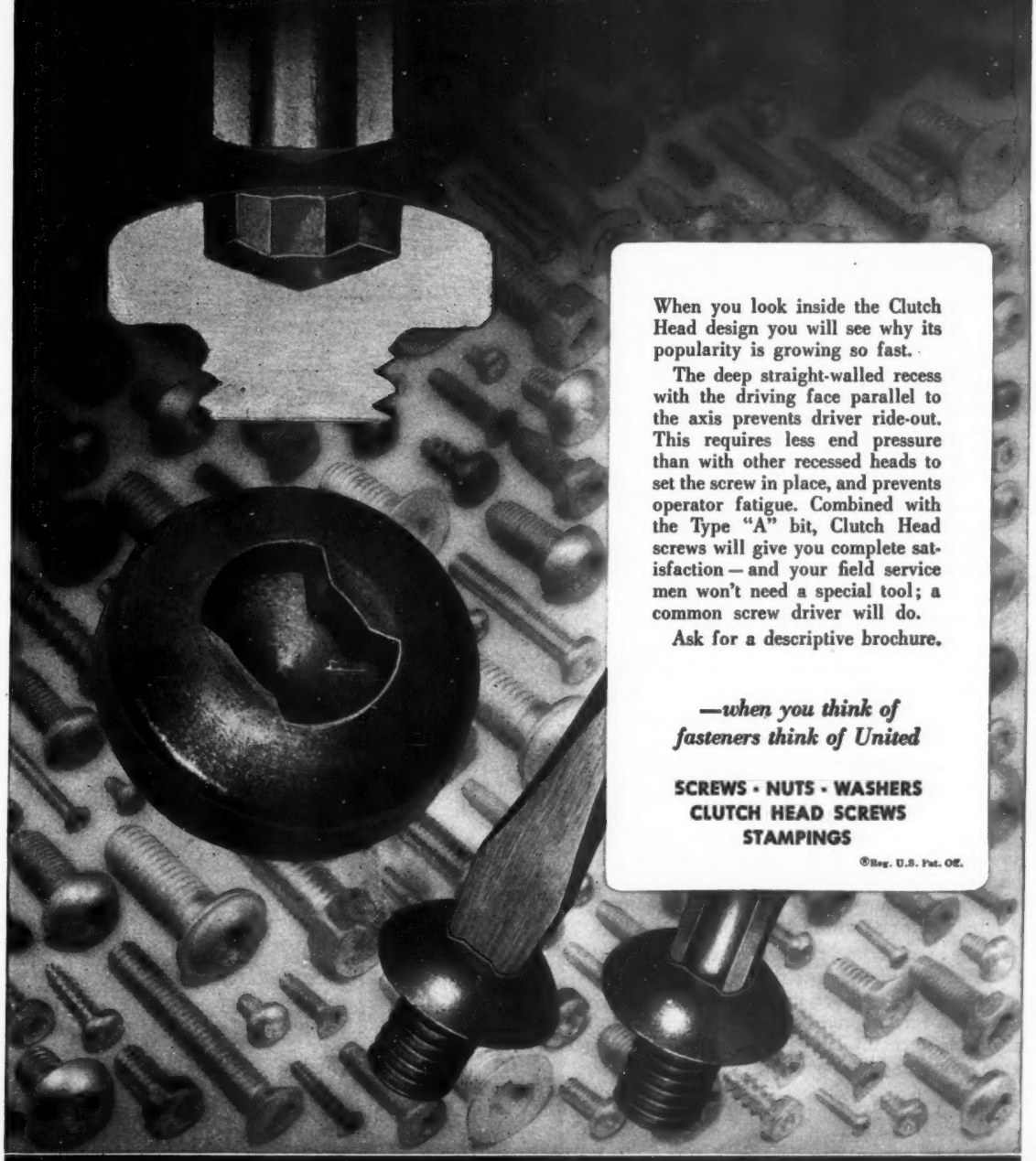
Straws in the Wind

Industrial use of electricity in the water-short Pacific Northwest will not be reduced beyond the November cut of 10 per cent until January, at least . . . Kaiser Steel Corp. is increasing output of coking coal at its Sunnyside, Utah, mines to 1.6 million tons annually next year . . . Radio-TV parts and tube makers will fight, into the courts, if necessary, the OPS refusal to suspend price controls again on parts and tubes.

What Industry Is Doing

Watch for another battle in Congress on basing point pricing, zone pricing and identical pricing (p. 65) . . . The controls ship is still underway, but it may go into drydock by next June 30 (p. 66) . . . Industry's profits in the past seven years were overstated 44 per cent—over $38 billion—through obsolete depreciation practices, says the Machinery & Allied Products Institute (p. 67) . . . Farm machinery makers are expecting to reap only moderate sales in 1952 and 1953 (p. 68) . . . Railroaders reaffirm their need for 228,456 new freight cars by 1955 (p. 69) . . . The new Colmar, Pa., plant of Link-Belt Co. proves that jobbing shops may use mass production techniques and still be adaptable (p. 70).

UNITED
CLUTCH HEAD® SCREWS



When you look inside the Clutch Head design you will see why its popularity is growing so fast.

The deep straight-walled recess with the driving face parallel to the axis prevents driver ride-out. This requires less end pressure than with other recessed heads to set the screw in place, and prevents operator fatigue. Combined with the Type "A" bit, Clutch Head screws will give you complete satisfaction — and your field service men won't need a special tool; a common screw driver will do.

Ask for a descriptive brochure.

—when you think of fasteners think of United

SCREWS · NUTS · WASHERS
CLUTCH HEAD SCREWS
STAMPINGS

®Reg. U.S. Pat. Off.

United Screw and Bolt Corporation
Chicago 8 Cleveland 2 NewYork 7

Chapman Casts World's Largest Stainless Gate Valve

9-ton casting produced in austenitic chromium-nickel stainless steel

This valve, produced by The Chapman Valve Manufacturing Co., Indian Orchard, Mass., for the defense effort, is used in corrosive water service. It is stated to be the world's largest, with an overall height of 19 feet, weighing approximately 18,000 pounds. The rough casting weight was approximately 36,000 pounds.

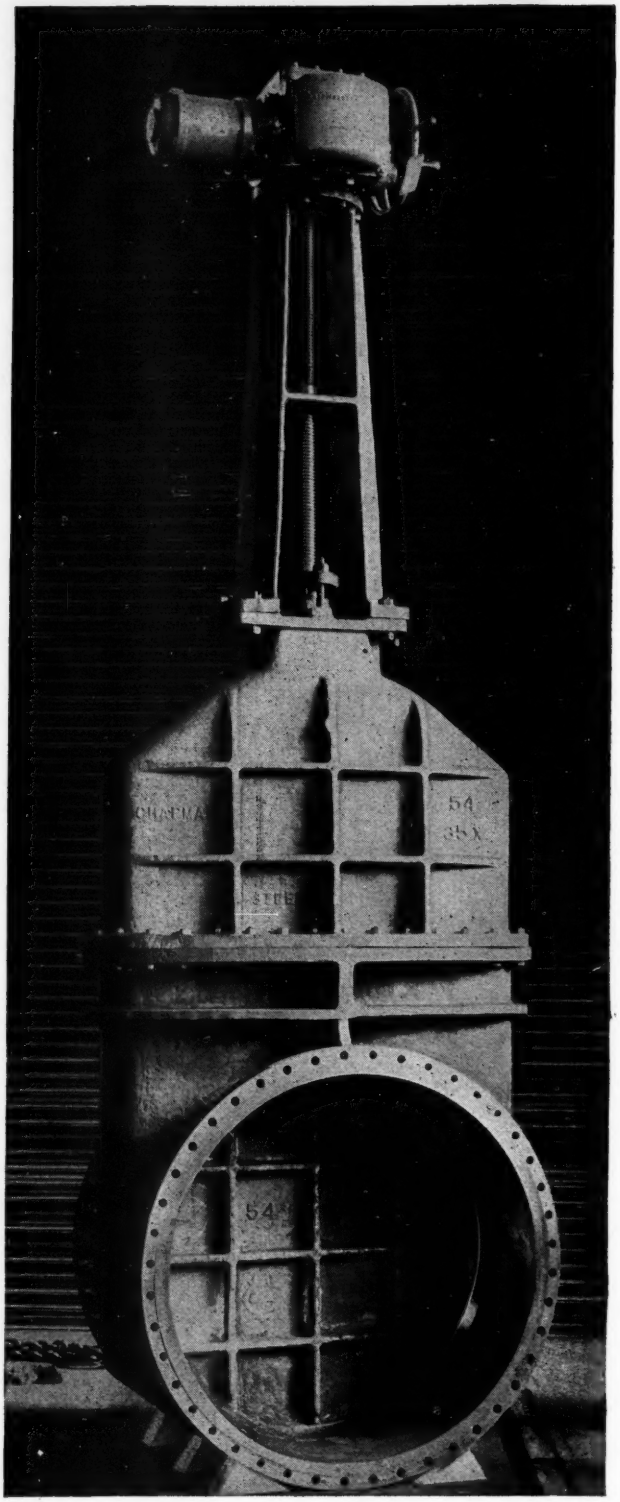
Cast in low carbon 18-8 chromium-nickel stainless steel, it is one more demonstration that size is no limiting factor when you cast parts in stainless steels to provide resistance to corrosion and erosion.

Stainless steel resists attack by nearly all oxidizing acid conditions. In addition, it helps you trim bulk and deadweight without sacrificing strength and safety.

At elevated temperatures, austenitic chromium-nickel stainless steels are distinguished by their strength and outstanding resistance to oxidation. At temperatures down to —320° F. they retain their toughness and unusual strength.

Investigate all the benefits stainless steels can give you. Leading stainless steel companies and foundries produce nickel-containing stainless steels in all commercial forms. A list of sources of supply will be furnished on request.

At the present time, the bulk of the nickel produced is being diverted to defense. Through application to the appropriate authorities, nickel is obtainable for the production of austenitic stainless steels for many end uses in defense and defense supporting industries.



INCO SERVICE

THE INTERNATIONAL NICKEL COMPANY, INC. 67 WALL STREET NEW YORK 5, N. Y.

Overripe for Reform

In casting about for opportunities to improve the functioning of the federal government, the incoming Eisenhower administration should not overlook the Labor Department. This youngest of departments with a secretary of cabinet rank was established in 1913. Its first three secretaries—William B. Wilson, James J. Davis and William N. Doak—administered the affairs of the department for 20 years with little excitement or furor.

This routine of serenity was rudely shattered when the Franklin D. Roosevelt administration came into power in 1933. Since then the official lives of Secretaries Frances Perkins, L. B. Schwellenbach and Maurice J. Tobin have been made hectic by as queer a sequence of events as has ever confronted cabinet members. John L. Lewis made a horse-trading political deal with President Roosevelt. The Wagner Act was passed and the National Labor Relations Board established. The Taft-Hartley Act superseded the Wagner Act. The National Mediation Board was set up. All of these and other New Deal and Fair Deal agencies created to handle labor problems operated outside of the jurisdiction of the Labor Department.

In spite of this elaborate machinery, labor turmoil grew from bad to worse. President Truman chose to ignore lawful procedure as much as possible. He resorted to fact-finding boards, special mediation panels and other expedients in order to circumvent the will of Congress. In certain instances—one as recently as last Wednesday—he acted on his own personal whim in direct contradiction to the law of the land. In a very real sense, he has been at certain times the best business agent CIO, AFL or UMW ever had.

Several fates have intervened to facilitate a long overdue reform in the government's handling of labor problems. The advent of a new administration in Washington, the succession of George Meany and Walter Reuther to posts held by the late William Green and Philip Murray and the well-known anti-Truman attitude of Congress on labor matters augur well for drastic changes in government policy.

The circumstances are propitious for a rebirth of the Labor Department and a return to lawful means of handling labor disputes.

E. C. Shaw

EDITOR-IN-CHIEF

PROFIT IS SUBNORMAL: In its "Capital Goods Review," Machinery & Allied Products Institute shows convincingly how American industry penalizes itself by overstating its profits. In the seven postwar years its true profit, according to the institute (p. 67), has been $88 billion instead of the $126 billion it reported. The overstatement of profit by $38

billion, or 44 per cent, results from industry's practice of basing depreciation charges on original cost. The difference between original cost and replacement cost must be made up from what erroneously was reported as profit.

If industry had reported profits properly from 1946 to 1952, it would have been found that the ratio of profits to sales in that period was only 3.2 per cent, whereas in the seven-year period of 1923-29, the ratio was 5.3 per cent. Several other comparisons put forth in the institute's report show that true profits in recent years have been "consistently and substantially subnormal."

Industry's needless overstatement of profits has encouraged anti-business elements in government and unionism to make much of industry's "exorbitant profits." Isn't it high time that we be realistic about true earnings!

* * *

LOW INVENTORIES DUE: Management executives in general and purchasing agents in particular are smacking their lips in joyous anticipation of the return sometime in 1953 of sound, normal inventories. Since 1949, inventories in the metalworking industries at the year-end (p. 75) have been mounting steadily. In a large measure this reflects the abnormal circumstances of shortages, strikes, government regulations, etc. which forced manufacturers to stock enough goods to be prepared for almost anything.

Early relief from this form of torture is seen in the present trend toward firmer delivery dates. As sources of supply become more dependable, manufacturers will be able to reduce inventories to more realistic proportions. In some mass-producing establishments there is hope that a true buyers' market may make it possible for precise delivery schedules to become almost a complete substitute for inventory. In any event, present indications point to a drastic reduction of inventories in 1953.

* * *

PENALTIES BACKFIRE: In most European countries the Korean boom has been tapering off gradually since mid-1951. This is intensifying competition for export markets and is creating new internal problems. For instance, in Sweden and Italy the easing of boom-time activity is affecting employment, but in strangely different ways.

In Sweden, Korean War stabilization (p. 76) is reducing employment in some consumer goods industries. This is a godsend to certain capital goods industries, such as iron and steel, because it is relieving what had been a serious manpower shortage. On the other hand, in Italy the decline in activity aggravates what already had been the highest unemployment rate in Europe. By law, Italian employers must pay a high penalty for discharging employees. This causes employers to be reluctant to hire men for short-term work. It is an excellent example of how a government regulation which makes the labor market inflexible invariably backfires in time of need.

* * *

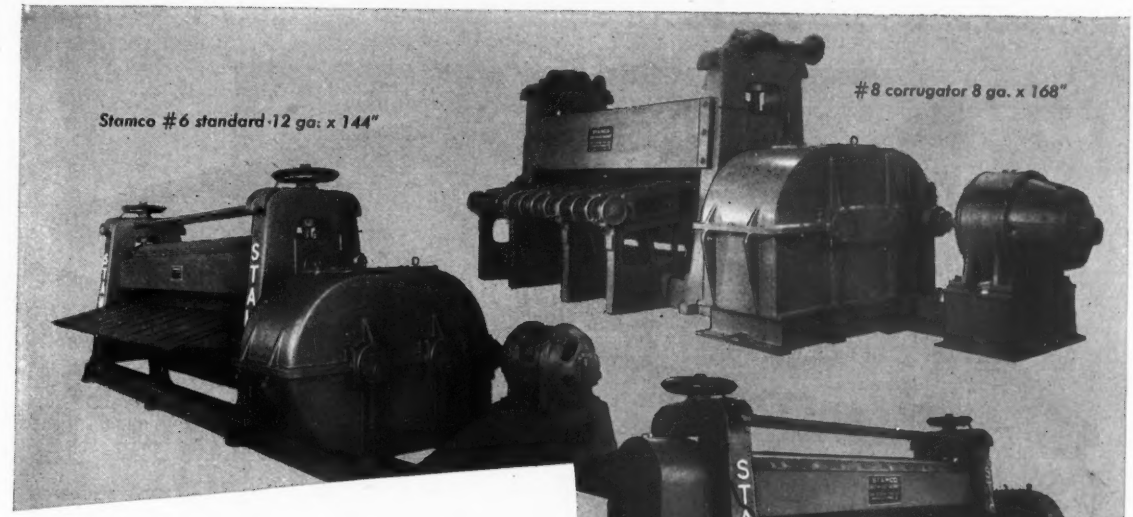
THE TIDE IS TURNING: If you take a good look at recent happenings in Britain and the United States you must be cheered by the evidence that the pendulum is swinging from left to right. In the United States, President-elect Eisenhower's cabinet appointments point to an incoming administration that will shift rightward. In Britain Chancellor of the Exchequer R. A. Butler has done such a good job of turning an alarming deficit into a modest surplus, that the Churchill party is gaining strength. The last "no confidence" vote gave him the largest margin since he assumed office.

These signs are encouraging but not conclusive. We've got to fight for every gain against the demoralizing influence of leftists. The tide is turning, but we must be smart, alert and positive.

* * *

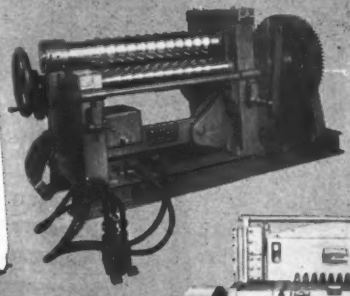
SPECIALIZATION PAYS: In debates about alleged competition between large and small enterprises, one encounters cynics who say that the "bigs" are so powerful that no small fry can encroach upon their preserves. However, there is a not-too-vocal minority of enterprising individuals who are convinced that the big outfits are vulnerable and that their very bigness offers opportunities for the "smalls."

American Silver Co. has cashed in on this viewpoint. It is custom rolling ultra-thin, high precision strip (p. 94) on orders so small or so exacting in specification that the big strip producers do not want the business. We are firm believers in the idea that there are numerous cases where specialization in a product that is a headache for big outfits can be profitable for smaller enterprises.



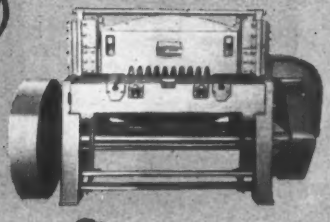
For Roll Corrugating and Culvert forming . . . see

Stamco



Stamco #6A high speed corrugator

Stamco 8 ga. Culvert Curving roll



Stamco 8 ga. x 36" corrugated shear

Stamco high duty Culvert Punch and Riveter equipped with air operated friction clutch

Stamco standard Culvert Punch and Riveter

STAMCO, Inc., New Bremen, Ohio

This is Inland's stand:

To be large enough to manufacture a wide variety of products for midwestern steel users—yet small enough to give personal, thoughtful attention to each customer.

INLAND

INLAND STEEL COMPANY
38 South Dearborn Street • Chicago 3, Illinois
Sales Offices: *Chicago, Milwaukee, St. Paul, Davenport, St. Louis, Kansas City, Indianapolis, Detroit, New York*

Lowell B. Mason of the FTC

NEA

Sen. William Langer

They're Key Figures in the . . .

Battle Ahead on Pricing Policies

WATCH the new Congress for pricing policy action that may affect you.

It looks as though another battle is shaping up to clarify what is or is not legal in basing point pricing, zone pricing and identical pricing. The present muddle grew out of Federal Trade Commission action in the last several years against pricing practices of the cement, steel and other industries.

Spurs to Action—Two of the cases of harassment—those against the Chain Institute and National Lead—are just due for decisions. By coming at this time, they would serve to stimulate clarifying action in the 83rd Congress that will convene in January. Previous efforts, in the 81st and 82nd Congresses, have been unavailing.

The Chain Institute case concerns basing point pricing, and the National Lead case involves a system of zone prices. Both cases have been before the FTC many months. Now the heat is on to get the decisions out of the way before the new administration takes over. The decisions will be by a divided commission, with the majority holding that the group of companies involved in each of the two cases are guilty of a price-fixing conspiracy—the evidence being identical prices. Commissioner Lowell B. Mason, who is considered most likely to become commission chairman under the new administration, is expected to dissent, arguing that mere identity of prices or of a pricing system, even though knowingly created, is not necessarily proof of a conspiracy.

Revival—These cases are expected to raise the ghost of the old argument over "conscious parallelism of action" which touched off much of the discussion in the 80th and 81st Congresses where legislation (S.1008) aimed at clipping the wings of the FTC was introduced.

The bill passed both houses, but was vetoed by President Truman. There were not enough votes to override the veto.

Safeguard—The bill would have provided that no geographic pricing system would be unlawful, standing by itself. It also would have assured the right of a seller to meet or beat in good faith the price of a competitor. This, say proponents of the measure, would have obviated the present danger, under the Robinson-Patman Act, of proceedings against a manufacturer who aims either at getting new or retaining old customers.

Proponents of S. 1008 argue that manufacturers are barred now from absorbing freight to meet competition. Because of the dominance then of a sellers' market, Congress did not consider the freight absorption problem as very real. But when the sellers' market recedes, freight absorption will become a necessity for manufacturing plants located farthest from consuming markets.

Shaping Up—The hard facts of economics, then, are expected to add fuel to the fire—with the chances now considered good that some of the teeth will be pulled from the Robinson-Patman Act.

Perhaps the biggest single stumbling block to quick action, say proponents of basing point legislation, is Sen. William Langer (Rep., N. Dak.), who is expected to head the powerful Senate Judiciary Committee. He was one of the more vociferous opponents to such legislation in the 81st and 82nd Congresses.

Controls' End Now in Ike's Hands

Defense Mobilizer Henry Fowler won't order an end to CMP effective second quarter as many had hoped. He's leaving the knotty controls question to Ike's advisors

THE SHIP *Controls* is still under way this week, but it's evident to all observers that she has rudder trouble.

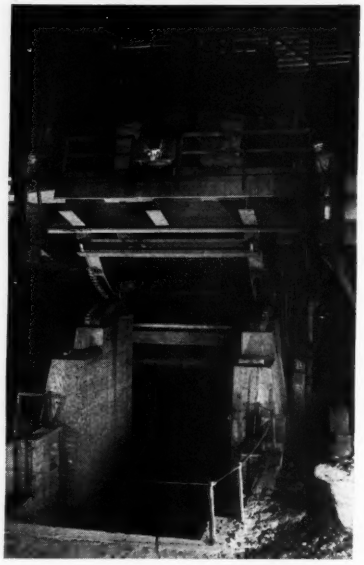
Many hoped she would be drydocked soon, but Defense Mobilizer Henry H. Fowler battened down the hatches last week and ordered "steady as you go." His command scuttled any hope that CMP distribution of steel to the civilian economy would be dropped now, effective in the second quarter of next year, but it found the crewmen in chaos. NPA had already started to pay off the controlled materials crew and is hard at work signing them back on.

New Pilot—Mr. Fowler's reasoning is that it should be the new president's prerogative to find controls shipshape on Jan. 20 in the event he wishes to continue the voyage. Contingent on his military production course, he can reduce speed or drydock her, but the decision will be a painful one for Eisenhower.

Some small manufacturers aren't sure they want to compete on the open market for yet-limited materials. They prefer to play safe and take their certain, though limited, allocations. Larger corporations, on the other hand, hope for an early return of the open market so they can shed the red-tape fetters and begin to plan production.

Still Good—If controls continue or not, manufacturers are assured of substantially increased steel supplies—probably about 30 per cent—as production of ingots increases. For the same reason, Ike may see fit to decontrol by the second quarter anyway.

Business was disappointed by Mr. Fowler's adamance. But as Harry Truman stands on the poop deck countermanding the WSB's course on the miners' $1.90 wage increase, it's plain to all the crew is wearing life preservers. Chances are the *Controls* will go into semi permanent drydock by next June 30. (see STEEL, Nov. 24, p. 69)



New Furnace at Timken

One of three modern 20-foot, top-charge electric arc furnaces at Timken Steel & Tube Division of Timken Roller Bearing Co., Canton, O., appears above. The installations will replace an equal number of 125-ton open hearths, with an expected production increase of 75,000 tons annually. One design improvement is electro magnetic inductive stirrer seen on bottom

Steel Crimps Cabinet Sales

Steel allocations under CMP in the first quarter are expected to reduce the operating rate of the steel cabinet manufacturing industry below that of any previous quarter since start of the Korean War.

That's what members of the Steel Kitchen Cabinet Manufacturers Association were told at their quarterly meeting in Cleveland last week. While the sales potential for kitchen cabinets is high, full advantage of demand cannot be realized because of shortages of steel and other raw materials. Removal of government controls, hoped for by second quarter, 1953, will permit full operations by manufacturers in working off order backlogs.

Officers of the association are: President, M. M. Miller, Miller Metal Products Inc., Baltimore; vice president, C. S. Motter, Morton Mfg. Co., Chicago; executive secretary-treasurer, Arthur J. Tuscany, Cleveland.

More Die-Block Capacity Needed

To meet forging and extrusion requirements for the Air Force heavy press program, die-block capacity will have to be increased substantially with some blocks weighing in excess of 20 tons each. That is the conclusion of those who attended the annual meeting of the American Society of Mechanical Engineers held Nov. 30-Dec. 5 at the Statler and McAlpin hotels in New York. In discussing the metallurgical factors involved in the program, the engineers noted that aluminum alloy ingots and rolled stock must be larger. Die-sinking practice is already undergoing changes.

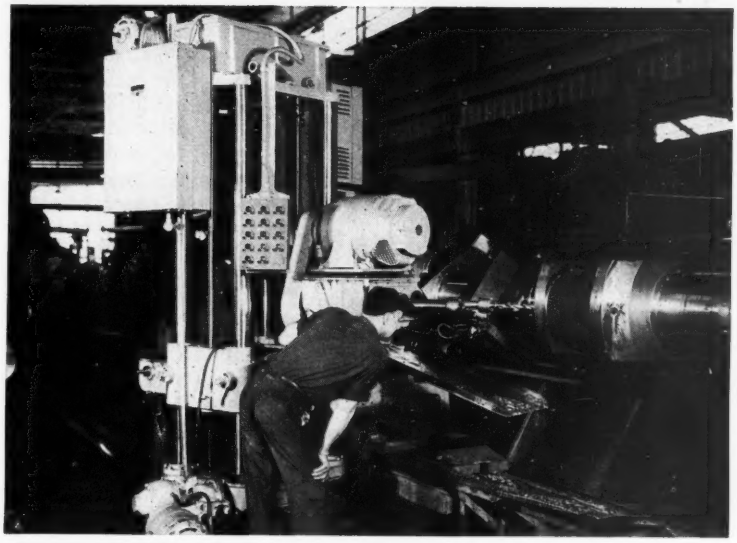
T. L. Fritzlen, chief metallurgist for Reynolds Metals Co., Richmond, Va., estimates an aluminum alloy ingot 32 inches in diameter and weighing up to 8000 pounds will be required. Up to 16-inch-diameter rolled stock also will be required, but that in turn will need larger blooming mills than those now used for rolling aluminum.

While much has been accomplished in diemaking for extrusions, T. F. McCormick, metallurgist at Aluminum Co. of America, Pittsburgh, says it is not yet possible to design and build a die for complicated shapes with complete assurance it will produce a usable extrusion the first time tried.

New Renegotiation Policy

The Renegotiation Board has decided on a general policy of accepting the figures of a contractor who, for renegotiation purposes, places a higher value on his facilities than their book value for accounting purposes. It will also accept his tax write-off.

A staff of appraisers and engineers will make necessary investigations if contractors' claims appear unreasonable. This is discussed in Renegotiation Staff Bulletin No. 10, obtainable at five cents from the Superintendent of Documents, Government Printing Office, Washington 25, D. C.



Horizontal Machine Aids Drilling in Crankshaft

Cooper-Bessemer Corp., Mount Vernon, O., ordered this horizontal machine for deep hole drilling in heavy crankshafts. Designed by Cooper-Bessemer engineers, this machine employs a machine head moving along the shaft, swiveling to any angle and adjusting to height required to drill a complete shaft at one setting. Above, oil holes are drilled in a crankshaft weighing nine tons

Industry's Profits: Overstated 44%

Inflated replacement costs are thinning industry's profits alarmingly. It's time for new emphasis on the role of profit and modernization of our depreciation practice

OBSOLETE depreciation practice exaggerated American industry profits 44 per cent—over $38 billion—for the seven postwar years. The reason: Replacement costs rise during an inflation period, depreciation charges based on original cost become inadequate and the resulting deficit must be made up from what is erroneously accounted as profit.

An accounting based on rising replacement costs would reveal industry's true profit to be $88 billion rather than the $126 billion reported for the postwar period, says the Machinery & Allied Products Institute. And had the treasury allowed replacement costing for income tax purposes, the $38 billion difference in the reckoning of taxable income would have effected tax savings of more than $17 billion!

Marked Contrast—As it is now, corporations have paid more money in income taxes for the period than they salvaged in real profits—$111 billion in taxes against $88 billion profit—rather than the markedly contrasting $111 billion to $126 billion ratio now extant.

Contributing also to the exaggerated profit picture is the fact that inflation results not only in the overstatement of profits, but an understatement of net worth. Comparing profits with net worth as both are commonly stated gives a profit level of over 10 per cent for the period. However, with profits and net worth corrected on a replacement cost basis, the real profit level is only 5.9 per cent.

Cause for Concern—During the postwar period, corporate debt has risen $80 billion. When the profit of corporations is realistically computed, they have an offsetting increment of only $34 billion real net savings rather than the more reasonable $72 billion now complacently assumed. That gives rise to serious question about the supply of funds for equity financing. Even when the $13 billion realized (net) in the interval from sale of stock is added, the total addition to equity of $47 billion is still far below the addition to debt.

The role of profits in a dynamic and expanding economy and the need for heavy and sustained investment in a new productive technology for a rising standard of living and for national security needs re-emphasis. Many corporate managements are keenly aware of the illusory character of the profits they have reported in recent years. Others have been taking them at their face value. In so doing, they have been fooling not only labor, politicians and the public generally, but themselves as well.

Properly computed and evaluated, postwar profits have been low—not high.

Tenn-Tex Opens New Plant

Formal ceremonies opened Tenn-Tex Alloy & Chemical Corp.'s new Houston plant. Their facility, for production of ferromanganese and ferrosilicon, is rated at 2500 tons of alloys a month, processing 5000 tons of manganese ores which will be imported through Houston.

Carl McFarlin, president of the newly-organized firm, is also president of Tennessee Products Corp., Nashville, Tenn. While most of the manganese production at his Houston plant will go to the neighboring Sheffield Steel Corp. mill, some will be available for general distribution.

Three electric furnaces will produce metal alloys from raw ores. There are two main buildings on the site in addition to several smaller structures.

74 Nations Aid American Steel

Some 74 foreign countries received an estimated $320 million from this country in payment for materials, metals and ores required by the U. S. steel industry, American Iron & Steel Institute reports.

The greatest disbursement went to Canada, receiver of more than $91 million, principally for nickel, iron ore, zinc and ferromanganese. Next in importance as exporters was Europe, not including Norway and Sweden. Tin is the most valuable metallic import from this area.

FARM MACHINERY

Mechanization to avoid rising labor costs may be the answer as farm equipment sales lag. First half of 1952 saw sales ahead of record 1951 rate; second half movement is slow

FARM EQUIPMENT makers expect to harvest only moderate sales crops in 1952 and 1953. So, distribution for the industry once again outranks production.

The accompanying chart shows that 1952 sales of $2 billion and the 1953 volume estimated at $1.8 billion will still be comparable with other postwar years, even if setting no records. Yet, in less than a year salesmanship, not shortages, occupies the industry's thinking.

The Turning Point — Until mid-1952 manufacturers' sales of farm equipment were excellent; in some cases first-half volume was as much as 30 per cent ahead of the same period of 1951. That situation was caused by good first-half retail sales and by the optimistic buying of dealers in anticipation of shortages induced by the steel strike and labor troubles in the plants of farm equipment makers and their suppliers. But, except for a few items, no shortages developed at the retail level, and dealers began curtailing orders to manufacturers and liquidating inventories.

The result: Declining business in the last half of 1952 for manufacturers, a condition that will continue into 1953. The export market is also sluggish. Dealers by this time have begun to pare down inventories of new equipment, and they hope for a seasonal spurt by next spring. Most dealers still are overstocked on used equipment.

Why?—One explanation of the decline in the market is the drouth which prevailed over so much of the United States last summer and fall. Full impact of the drouth on farmers' purchasing still isn't known, and it could curtail equipment buying more than expected.

In any event, the rural purchasing power is slipping, if only because of increasing costs. Farmers' dollar net income is dropping slightly; their real net income is falling markedly. Net dollar income in 1952 will be about $14.2 billion, compared with $14.3 billion in 1951. That's a 0.7 per cent slip in dollars, a 2.7 per cent drop in terms of real value. The trend downward may continue next year because farm produce exports are expected to slide a little below the $4 billion volume of fiscal 1952. Domestic produce demand will stay about the same or rise slightly.

The Plus Side—Not all is gloom in the short-term outlook for farm machinery sales. Farm labor is scarce; wages are rising. They rose 7 per cent this year over last, and they may climb another 5 per cent in 1953 over 1952. That situation is a natural to boost equipment sales. Even the decline in farm earnings could work in the implement makers' favor if farmers decide that more mechanization is the road to lower costs.

The question now unsettling market analysts in the farm equipment industry is this: Is that earnings decline enough to stimulate sales by making farmers more cost conscious, or is it enough to make them pull in and not buy anything?

FARM EQUIPMENT SHIPMENTS

1949	$1,813,008,000
1950	$1,792,427,000
1951	$2,204,787,000
1952	$2,000,000,000*
1953	$1,800,000,000*

Source: 1949-1951, U. S. Bureau of the Census
*Estimated by STEEL

Dampening Effect—Limited supplies of steel, copper and aluminum, under CMP rationing, did dampen the production of farm machinery during the first half of 1952. Certain dislocations also were caused by the steel strike in midyear. But declining demand for machinery in the last half cancelled out most metal shortages, except forging billets, hot and cold-finished bars and hot-rolled sheets.

First quarter, 1953, supplies of metals probably won't cause too big a problem for farm machinery makers because of curtailed production schedules now projected. Steel allotments have been averaging about 550,000 tons a quarter in 1952, and that has proved adequate. In 1949 when the industry produced about $1.8 billion worth of

equipment, the same as it hopes to turn out next year, it consumed less than 500,000 tons of finished steel a quarter. The industry should have little trouble getting that much in 1953.

Postscript — Although there should be plenty of most types of farm equipment next year, shortages in some lines that existed in 1952 may persist in the next 12 months. Among products in short supply have been corn pickers, balers, combines and special items for processing, storage, feeding and the like. Adequate production of those short lines has been hampered by shortage of materials and components and to some extent by strikes in implement manufacturing plants.

This year's drought has probably hastened for agricultural equipment makers a process now going on in all consumer durable goods industries—the transition from a sellers' to a buyers' market. The ready-made market of the last 12 years must be more man-made from now on, industry leaders point out.

They'll be emphasizing the cost-saving aspects of their implements, designing them to save labor, engineering them to do farming faster. For a big factor in machinery makers' favor is the ever-increasing need for more food. The 1952 crop production was an all-time record, despite bad weather; 1953 may be another milestone.

For the Long Pull—W. A. Roberts, president, Allis-Chalmers Mfg. Co., told members of the Farm Equipment Institute that by 1975 this country will need 30 per cent more farm production when there may be a population of 200 million.

If that comes about, implement makers can expect excellent sales harvests in the future.

Troubles in Transport

Railroaders reaffirm their need for more freight cars. DTA says truckers' needs are growing, too

RAILROADERS have reaffirmed their goal of a 1,850,000-freight car fleet by Dec. 31, 1954. W. J. Faricy, president of the Association of American Railroads, said 228,456 cars would have to be built to attain the goal, since 135,000 cars are due for retirement by that time.

As in 1951, the program calls for construction of 10,000 freight cars a month for Class 1 roads.

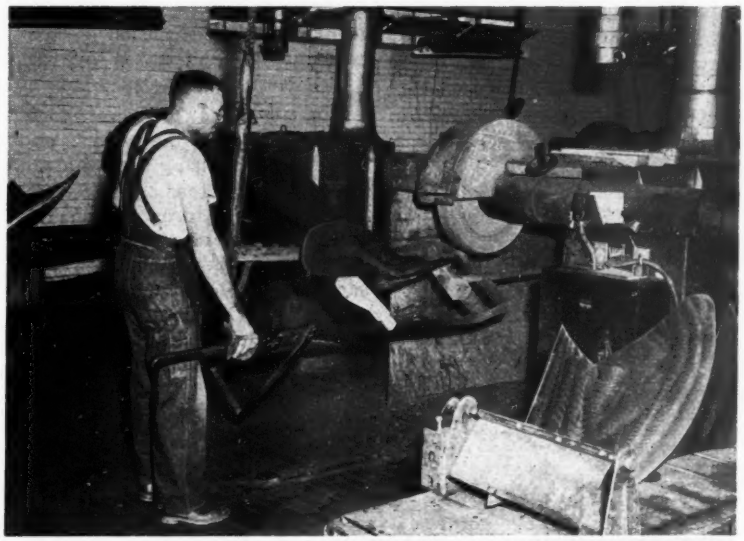
Clearing Up—That statement refocuses the freight car building program after both demand and building schedules have been blurred during 1952. The steel strike reduced freight car loadings this year. In turn, operators hesitated to place orders for new cars. They made-do with old cars which normally would have been retired.

So, even though freight car production never reached the 10,000-cars-a-month rate since October, 1951, freight car backlogs dropped constantly from 120,251 in January, 1952, to 90,708 in October, 1952.

Insufficient Benefit—Now, railroaders and the Defense Transport Administration say car building must get up to 10,000 a month as quickly as possible. It may require a shift of emphasis in the steel industry. James K. Knudson, DTA administrator, says: "While there has been additional steel capacity, this has not sufficiently benefited the transportation industry, as much of that capacity has been built for the production of lighter types of steel so much in demand for producing consumer goods."

DTA is also urging increased production of motor freight equipment. DTA field service reports reveal October highway freight traffic increased an average of 11 per cent over October, 1951; September highway traffic was up 9 per cent over September, 1951.

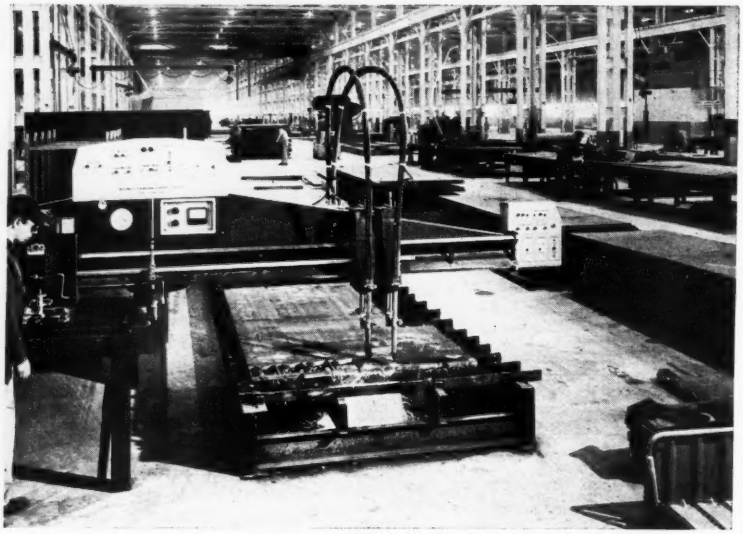
If it has Wheels — R. R. Monroe, director of the Street & Highway Division of DTA, says, "In some areas, motor property carriers are utilizing all of their equipment to meet this increased demand," and unless sufficient replacement parts and supplies are forthcoming "a real hardship might be incurred by carriers now using equipment to near-capacity." A DTA survey indicates traffic will remain at a high level for the next six months and show a power unit replacement need of at least 5.8 per cent of the fleets of carriers interviewed.



Moldboards and perfectly-fitting shares for John Deere truss-frame plows are ground to a "soil-flow" polish at Moline, Ill., plant of Deere & Co.

Alcoa To Build New Plant

Aluminum Co. of America plans to build a fabricating plant near Lancaster, Pa., for producing aluminum screw machine products, fasteners, rivets and nails. Operations at Alcoa's Edgewater, N. J., plant would be relocated at the $3 million Lancaster factory. Meanwhile, aluminum sheet, impact extrusion and foil production could be expanded at Edgewater.



Flamecutting heavy plate in one of five production bays as a . . .

Jobbing Shop Runs on Mass Production

Link-Belt's new Colmar, Pa., plant proves that custom manufacturing shops can incorporate both straight-line production methods and adaptability

MASS-PRODUCTION techniques can be applied to job shops too. For proof just look at Link-Belt Co.'s spanking-new 300,000-square-foot plant at Colmar, Pa. where manufacture of custom-designed conveying and processing machinery has been put on a straight-line production basis.

"It's an entirely new concept in custom manufacturing," says Robert C. Becherer, Link-Belt president, as he points proudly to roomy work areas in the 880 x 300-ft plant and two-story office building. "Not only do we have advantages of straight-line production, but relatively few structural shops have the flexibility we have." Layout changes to suit a wide variety of products can be made quickly.

No Crowding—Located 25 miles north of Philadelphia, Link-Belt's 17th plant was built to serve the eastern area and export markets. The Austin Co., Cleveland, designed and built the Colmar plant which is served by the Reading Railway. Every day new equipment and machinery are hauled into the plant, which will be in full operation by July, according to L. J. Carson, general manager. Up to 1500 employees may be needed at the plant, which currently is working on elements for a 100-ton-a-minute iron ore handling system for Orinoco Mining Co. in Venezuela. Completion of this job is set for December, 1953.

Location in the mushrooming Delaware river industrial area is a natural for Link-Belt. It's close to export customers, chemical plants of the East and many industries that are gravitating to U. S. Steel's Fairless Works. The company feels its eastern potential has outgrown its Philadelphia plant, which will be kept in operation.

Flexibility—Practically any type of conveying installation or sewage treatment facility can be designed at Colmar, regardless of size, complexity or end use—and a vast amount of space is needed for welding, fitting up and assembly in this type of manufacturing. Engineering quarters are a draftsman's dream, located in a 60-foot-wide columnless area extending across the entire 240-foot length of the office building and allowing plenty of elbow room for drafting tables and desks. Ultimately 240 draftsmen can be accommodated here.

Straight-line production is aided by a system of six 10 to 20-ton Shaw Box cranes, that serve four of five 60-foot production bays with 32-foot clearance below trusses and extend under still higher transverse craneways in receiving and shipping cross bays at either end. Another feature is the high-level illumination created by sealed-beam incandescent lights.

The layout, designed for expansion to double present manufacturing area, is ideally suited for large complex engineered installations designed and fabricated in one location, though many components are brought in from other L-B plants.

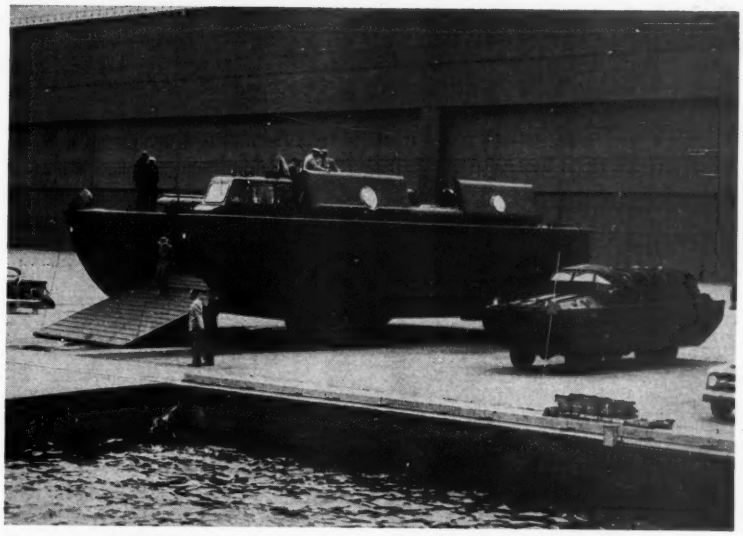
Report Steelmaking Progress

Five new blast furnaces were lighted in the first ten months of this year, and 13 more are scheduled before the middle of next year, American Iron & Steel Institute announces. This expansion is the greatest ever undertaken by the steel industry, AISI says.

The five blast furnaces added 2.3 million tons to the nation's pig iron capacity, raising that total to about 76 million tons a year. Most of the projected furnaces will produce 1500 tons of pig iron a day, or ten times the output of a furnace in 1880. Although their production will be used largely for steel manufacture, additional pig iron will be available for foundries.

SELECTED DEFENSE CONTRACTS IN EXCESS OF $100,000

PRODUCT	CONTRACTOR
Lathes	Lodge & Shipley Co., Cincinnati
Parts for Diesel Engines	Cooper-Bessemer Corp., Mt. Vernon, O.
Fuzes	Houdaille-Hershey Corp., Detroit
Crystal Units	Downing Crystal Co., Baltimore
Aircraft Parts	Pratt & Whitney Aircraft Div., United Aircraft Co., E. Hartford, Conn.
Aircraft Engine Parts	Bendix Aviation Corp., Detroit
Ignition Parts	Westinghouse Electric Corp., Pittsburgh
Propeller Parts	Pratt & Whitney Aircraft Div., United Aircraft Co., E. Hartford, Conn.
Telescope Mounts	Graflex Inc., Rochester, N. Y.



Army's BARC Dwarfs Earlier Sea-Going Vehicles

Army engineers introduce the BARC, a 60-ton amphibious cargo vehicle designed to eliminate beachhead supply bottlenecks. Shown above, the BARC is compared with a 2½-ton DUKW, an important amphibian of World War II. In tests at Fort Lawton, Wash., the larger vehicle demonstrated its land-sea adaptability. Afloat, diesel engines drive twin propellers. Ashore, separate engines power the wheels

CHECKLIST ON CONTROLS

Materials Orders

COPPER—Amendment of Nov 20, 1952, of NPA Order M-16 permits small brass and bronze foundries to self-certify orders for copper raw materials they need to fill authorized controlled materials orders from their customers if their requirements are less than 10,000 pounds of copper raw materials a month and no more than 1500 pounds of domestic refined copper. It also requires that persons, who in the process of manufacturing generate 5000 pounds or more copper-base alloy scrap per month, segregate such scrap containing 4 per cent or more of nickel by weight. Amendment was effective Nov. 20.

STEEL DISTRIBUTORS—Schedule 4 of NPA Order M-6A, issued and effective Dec. 1, 1952, prohibits delivery of certain semifinished steel products by steel distributors except pursuant to authorized controlled materials orders.

Controlled Materials Plan

CONSTRUCTION—Direction 9 to revised CMP Regulation 6, issued and effective Dec. 1, 1952, provides for the automatic revalidation of construction allotments issued pursuant to the provisions of Section 8 of revised CPM Regulation 6 and permits placement of authorized controlled materials orders calling for deliveries of controlled materials in the calendar quarter next succeeding the quarter for which the allotment is made.

Price Regulations

STAINLESS STEEL—Amendment 7 of CPR 98, issued Nov. 28, 1952, and effective Dec. 3, permits warehouse resellers of stainless steel strip to determine their ceiling prices under the warehouse resellers' regulation in the same manner as for stainless steel sheet.

SECONDARY ALUMINUM — Amendment 1 of Revision 1 of CPR 54, issued Nov. 28, 1952, and effective Dec. 3, changes the ceiling price for secondary aluminum ingots from a delivered basis to a shipping-point basis, with an allowance for transportation charges above $0.75 per 100 pounds.

COPPER WIRE—Amendment 3 of CPR 110, issued Nov. 28, 1952, and effective Dec. 3, makes several clarifying changes in the regulation covering manufacturers of copper wire mill products. Among the changes is the rewording of Section 1 (c), which makes it clear that CPR 110 covers sales only by the actual manufacturer of the commodity and not by any other persons who sell copper wire mill products.

AIR CONDITIONERS—Amendment 2 of Supplementary Regulation 30 of CPR 22, issued Nov. 26, 1952, and effective Dec. 2, adds air conditioners, window and console (self-contained), to Appendix A, the list of products which may translate f.o.b. into delivered ceiling prices.

FILING PROCEDURES — Amendment 38 of General Ceiling Price Regulation, issued Nov. 25, 1952, and effective Nov. 29, provides that a manufacturer whose gross sales of manufactured commodities were under $1 million in the last complete fiscal year should file his reports or applications with his OPS district office. If he distributes his commodities nationally or over areas larger than his own OPS region, he should file with the director of price stabilization in Washington.

FILING PROCEDURES — Amendment 6 of General Overriding Regulation 10, issued Nov. 25, 1952, and effective Nov. 29, provides that a manufacturer whose annual volume of net sales is $1 million or less may file reports and applications with the appropriate OPS district office. If his distribution to persons outside that district is substantial, he should file with the director of price stabilization in Washington.

IMPORTS—Collation 2 of CPR 31, issued Nov. 26, 1952, incorporates Amendments 1 through 14 inclusive.

TRANSPORTATION COSTS—Amendment 1 of Supplementary Regulation 122 of General Ceiling Price Regulation, issued Nov. 28, 1952, and effective Dec. 2, permits some resellers who act as manufacturers' selling agents to increase their ceiling prices to reflect increases in outbound transportation costs.

MERCHANT WIRE—Amendment 2 of Revision 1 of Supplementary Regulation 100 of General Ceiling Price Regulation, Supplementary Regulation 3 of General Overriding Regulation 35, and Amendment 2 of General Overriding Regulation 35, issued simultaneously on Dec. 1, 1952, and effective Dec 6, authorize producers of some merchant wire steel mill products to calculate ceiling price increases on the basis of columnar price lists rather than by using dollar-and-cents figures previously authorized. These actions also permit resellers and subsequent processors of those products to reflect in their ceiling prices a pass-through of those increased costs.

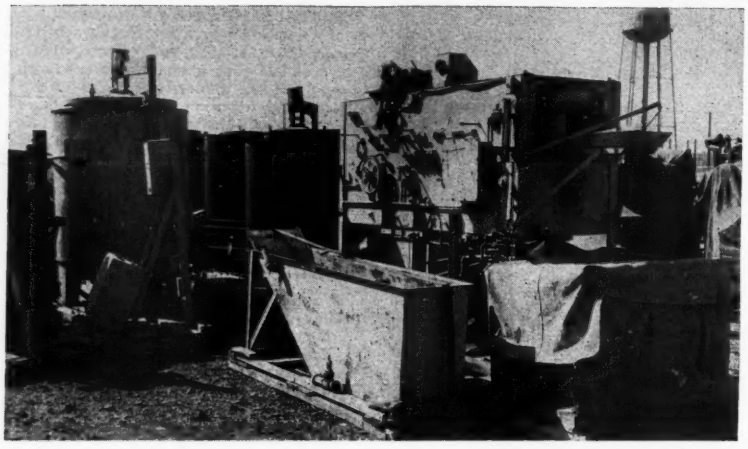
COPPER—Amendment 1 of Revision 1 of Supplementary Regulation 100 of General Ceiling Price Regulation provides a special method for determination of ceiling price increases for producers of copper clad and copper coated steel products. Amendment was issued Dec. 1, 1952, effective Dec. 6.

STEEL—Interpretation 1 of Revision 1 of Supplementary Regulation 100 of General Ceiling Price Regulation and Interpretation 1 of Steel Special Order 1, both issued Nov. 28, 1952, make it clear that steel mills may charge the price increase allowed by Revision 1 and Steel Special Order 1 on all steel mill products purchased, fabricated and made ready for delivery prior to commencement of the steel strike but not delivered until after the steel strike was terminated. Interpretation 2 of Revision 1 of SR 100 of GCPR, also issued Nov. 28, makes it clear that the increase in price should be applied only to the base price plus the standard quality extras, but not to boxing, packaging and packing extras.

REFINANCING — Interpretation 1 of CPR 67, issued Nov. 28, 1952, and Interpretation 22 of CPR 30, issued Dec. 2, make it clear that a "carryover" or refinancing provision in any agreement between sellers under CPR 30 or CPR 67 and their dealers, permitting a subsequent revision of prices to an amount in excess of the ceiling price in effect at the time of the sale to the dealer (which term includes delivery), is prohibited.

Windows of Washington

By E. C. KREUTZBERG *Washington Editor*



This expensive heat treating equipment is now junk. Is the answer . . .

A Storage Program by Tool Builders?

SURPLUS government-owned machinery and production equipment may be shipped back to the builders for storage.

Each builder would maintain an up-to-the-minute inventory to enable the armed services and their contractors to find wanted equipment without delay.

Gaining Favor—Under this proposal, the builders not only would be responsible for proper storage, but could be called on to modify the stored machines for use in a specific program, would get an allotment of government storage space in the vicinity of their plants, and would make their own arrangements with machinery rebuilders with the government paying the bills.

Exhibit Awful—The latest surplus equipment scandal to come to light illustrates how the taxpayers, and the defense potential, suffer when storage of industrial equipment is handled without adequate technical advice and supervision.

After World War II, some 500 pieces of industrial heating equipment — including heating, heat treatment, melting, induction and gas-fired furnaces—were disassembled and skidded by a government contractor. They were placed in storage in buildings at the Lake City Arsenal, just outside of President Truman's town of Independence, Mo., in 1951. To make way for then-current defense needs the buildings were vacated and the heating furnaces moved to a nearby outdoor location. Since then they have been subjected to Missouri weather — rain, sleet, snow and ice, dust and the excessive summer and winter temperatures.

Rapid Amortization! — The accompanying illustration affords an indication as to what happened. The expensive equipment, most of which could be used in the present defense program, is largely junk. Too far gone for repairs, it is good only for scrapping and for salvage of some of the parts—particularly those with high nickel and chromium content.

In discussing the Lake City Arsenal experience at their last meeting with the NPA, members of the Industrial Heating Equipment Manufacturers Industry Advisory Committee agreed to prepare pamphlets containing instructions on how to prepare their equipment for storage and how to maintain it in storage. Many in Washington feel that is a good idea—but that it does not go far enough. The only way to make sure that the equipment will come out of storage in usable condition, and the only way to maintain a running inventory of what is in the surplus stocks, they say, is to turn the job over to the builders.

NEW HOUSE COMMITTEE CHAIRMEN

Republican representatives in line for committee chairmanships after majority reorganization of the House are:

AGRICULTURE—
Clifford R. Hope (Kans.)

APPROPRIATIONS—
John Taber (N. Y.)

ARMED SERVICES—
Dewey Short (Mo.)

BANKING AND CURRENCY—
Jesse P. Wolcott (Mich.)

EDUCATION AND LABOR—
Samuel K. McConnell (Pa.)

FOREIGN AFFAIRS—
Robert B. Chiperfield (Ill.)

GOVERNMENT OPERATIONS—
Clare E. Hoffman (Mich.)

INTERIOR AND INSULAR AFFAIRS—
Dean P. Taylor (N. Y.)

INTERSTATE AND FOREIGN COMMERCE—
Charles A. Wolverton (N. J.)

JUDICIARY—
Chauncey W. Reed (Ill.)

MERCHANT MARINE AND FISHERIES—
Alvin F. Weichel (O.)

POST OFFICE AND CIVIL SERVICE—
Edward H. Rees (Kans.)

PUBLIC WORKS—
George A. Dondero (Mich.)

RULES—
Leo E. Allen (Ill.)

UN-AMERICAN ACTIVITIES—
Harold H. Velde (Ill.)

VETERANS' AFFAIRS—
Edith Nourse Rogers (Mass.)

WAYS AND MEANS—
Daniel A. Reed (N. Y.)

Grinding rocker arm shafts, 16¾" long; removing .015" to .020" stock on 170 shafts per hour. Shafts are selectively hardened, and delivered to the grinder in varying degrees of straightness. The production line consists of five CINCINNATI FILMATIC No. 2 Centerless Grinders and one CINCINNATI FILMATIC Centerless Lapping Machine.

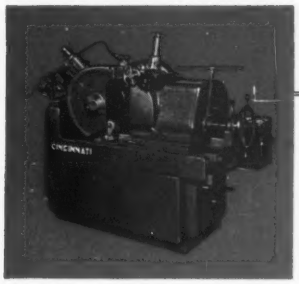
FILMATIC

No handling problem here

Continuous production setup grinds and laps ultra-precision work...

and only 2 men are needed to run 5 Centerless Grinders and 1 Lapping Machine

CINCINNATI



CINCINNATI FILMATIC No. 2 Centerless Grinder. Complete specifications may be obtained by writing for catalog No. G-611.

Tandem setups for continuous thrufeed centerless grinding operations are well known to the high production industries. But not so well known is the latest method of harnessing CINCINNATI FILMATIC Centerless Grinders together to simplify sizing adjustments and resetting. It works this way:

A Feedmatic Hopper automatically loads the work in the first machine. Thereafter, individually motor driven conveyors take over. They are mounted on the machines at the entrance side of the grinding throat and freely supported at the rear of the preceding machine. As the work leaves one machine, it is dropped on the conveyor for the next machine by a counterweighted escape device. Thus each unit can be individually adjusted without affecting the others, and it is unnecessary to maintain a straight line laterally.

To improve surface finish beyond the best obtainable by grinding, a CINCINNATI FILMATIC Centerless Lapping Machine can be placed at the end of the line of Centerless Grinders, as has been done in the production line illustrated. Setups of this type produce exceptionally high-quality work, with very little attention from the operator at each end of the line. ¶ CINCINNATI FILMATIC Centerless Grinders offer many advantages for continuous line production or job lots. FILMATIC grinding wheel spindle bearings will never fail; lubrication, including the infeed slides, is automatic; electrical control elements are built-in. And, to top it off, Cincinnati Application Engineers will be glad to help you with your high priority production problems.

CINCINNATI GRINDERS INCORPORATED
CINCINNATI 9, OHIO

CINCINNATI Feedmatic Hopper. Type E illustrated for thrufeed work. Type B, for infeed work, also available. Catalog No. G-575-1.

CINCINNATI

CENTERTYPE GRINDING MACHINES • CENTERLESS GRINDING MACHINES
CENTERLESS LAPPING MACHINES • MICRO-CENTRIC GRINDING MACHINES

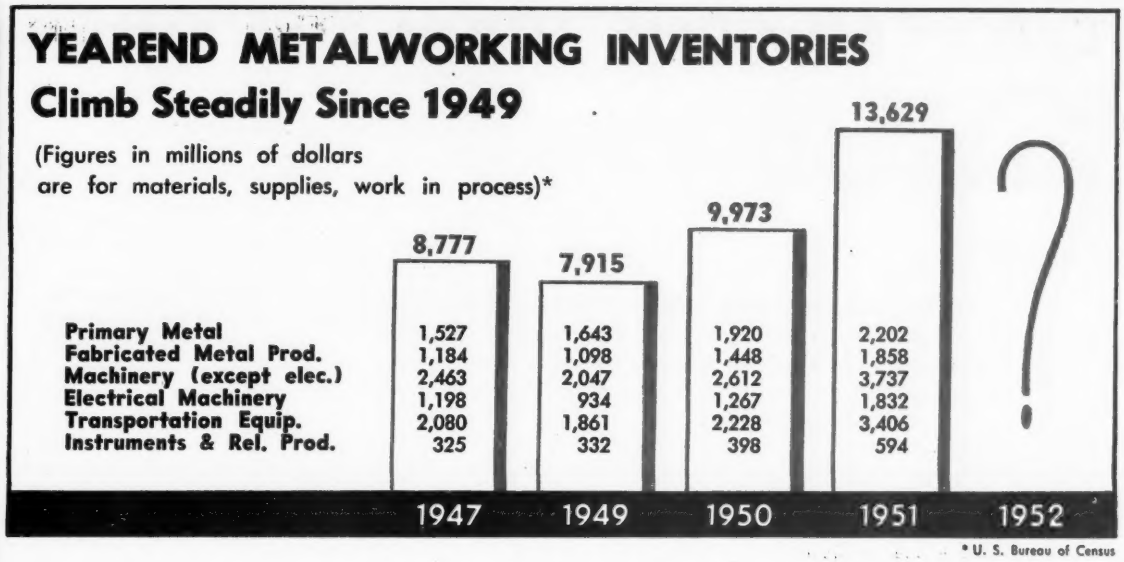
MACHINE SHOPS at MESTA

PLANERS . . .

Machining Large Gear Drive Base on a MESTA Heavy-Duty Planer . . .

Designers and Builders of Complete Steel Plants

MESTA MACHINE COMPANY
Pittsburgh, Pa.



Will The Upward Trend Continue?

Probably not. Look for a trend downward in inventory levels as delivery dates firm. Dependable supply could lead to near-elimination of inventory by mass-producers

FIRMING DELIVERY DATES are beginning to give manufacturers a foundation for sound inventory levels—and it's marvelous for the morale of purchasing agents.

Most have been pleaders, coaxers and expediters for the past two years or more. As one buyer puts it: "Though the return to normalcy is still just a trend, it's gaining ground rapidly, and the purchasing agent can start to think again in terms of planned buying rather than where-the-devil-can-I-get-it?"

What's "Normal"? — For some firms with long run products, normalcy will mean higher inventories to take advantage of discounts on hitherto - unavailable quantities; but for others the inventory level will be dropping. Machine-tool-building National Acme Co., Cleveland, is a firm in the latter group.

"We're finding that we can meet our production schedules with 15 to 20 per cent less components inventory now that shortages are less numerous and delivery dates more certain," says Rex J. Gosling, purchasing agent. "A good example of the improvement is motors and controls. A year ago delivery was running 30-50 weeks; now it's six to ten weeks. That permits us to keep more flexible and match our inventory to our orders as they fluctuate in intensity from one type of equipment to another."

Still Some Ulcers — Paradoxically, as the chart above shows, despite an approximately 14 per cent inflation in value since 1947, times of shortage tend to the highest inventories. Firms still coveting inventory cushions today are primarily those using cold-rolled sheet and structurals. One stove manufacturer reports a tight supply of cold-rolled stamped handles and enameling stock which run upwards of ten weeks for delivery when they can be found at all. Hence, he tries to keep at least ten-weeks' supply of handles on hand compared with his normal four-week inventory and struggles to hold his enameling stock at the 30-day limit with only moderate success.

With record steel production probable this winter (STEEL, Dec. 1, p. 47), shortages should loom less important in the inventory picture by second quarter and new ideas in inventory levels may get their first widespread trial in the near future.

Delivery for Inventory—The new concept largely substitutes precise delivery schedules for inventory. In pre-war days, inventory levels for the mass-producer were pegged at a 90-day minimum: 30 days in his plant, 30 days in transit and 30 days in his supplier's plant. With improvements in transportation, the 30-day transportation figure has been eliminated. With improvements in materials handling, such companies as the auto producers carry virtually no in-plant stock of most standard items. One fastener maker tells of his products going directly from receiving dock to assembly line in their original containers.

The same theory of maintaining the smallest conceivable inventory extends to refrigerator and lawn-mower producers and probably will be picked up by many other mass-producers in the near future. The advantages of low inventories are obvious, but they're contingent on a buyers' market and ready supply. Many observers feel 1953 may well be the year for both.

EUROPEAN COMPETITION STRENGTHENS

ITALY

Mining and engineering supported Italy's industrial production index near last year's level. Prospects for 1953 depend on how well the Schuman pool alleviates raw materials supplies and whether exports are built up

ITALY'S struggle to make prices of her metalworking products competitive with those of other European countries has not been entirely successful during 1952. For next year, Italy is pinning her hopes on "Trade, Not Aid" with the dollar zones and the Schuman Plan.

The record this year has not been entirely black, however. Efforts to maintain the lira have resulted in its being one of the most stable currencies in Europe. The lira's convertibility position has improved, too.

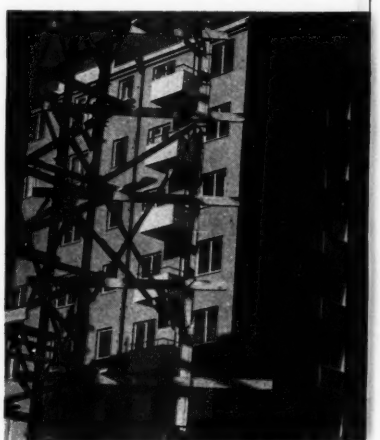
Desired Rise—Iron and steel production have risen consistently, approximating the desired increases of Italy's four-year rehabilitation program. For the first nine months of 1952, pig iron and crude steel outputs were at an annual rate of 1.2 million and 3.9 million tons respectively. These were increases of 16 per cent and 15 per cent over 1951 figures. Next year further increases in iron and steel capacity will be added as the new integrated plant of Cornigliano comes into operation.

Shipbuilding yards have maintained relatively high production this year and expect to enter near-boomtime activity in 1953. A recently-approved plan by the Italian government for 17 tankers assures full employment at the 11 Italian shipyards for two or three years.

Others Are Up, Too—Some consumer goods lines have been working at high production rates. The motor-scooter industry, for example, is working at full capacity. Other industries which have boosted output in 1952: Food, metals, en-

WITH this issue, the editors of STEEL begin a series of articles on what happened in 1952 and what's likely to occur in the economic futures of the major European countries. Next week, Dec. 15, we will deal with Belgium and France. Reports on West Germany and Great Britain will appear Dec. 22. A summary of the situation in Western Europe concludes the series on Dec. 29. Complete iron and steel statistics for all industrial nations will be carried in our 1953 Metalworking Yearbook issue, Jan. 5.

SWEDEN



CONSTRUCTION of apartment houses in Stockholm nears completion. Volume of construction in Sweden increased 10 per cent from 1951 to 1952

Rise in iron and steel output helped balance slow-down in consumer goods. Over-all output slipped only 1 per cent from 1951. Metals production will continue growth in 1953; so will competition on finished products

IN SWEDEN, as in many other European countries, the post-Korean boom has receded gradually since mid-1951. That pinched business in some sectors. And terms of international trade took a markedly unfavorable turn.

But, stabilization has aided iron and steel output and should continue next year to help Sweden realize her plant expansion program, started late in the 1940s.

Some Fared Well—In contrast to a slump in some consumer goods industries capital goods makers increased their employment, and output was up 4 per cent during the first six months of 1952 over the like period in 1951. Net effect of these opposing trends was only a 1 per cent decline in total manufacturing and mining output for the same period.

With post-Korean stabilization, Swedish export prices declined by

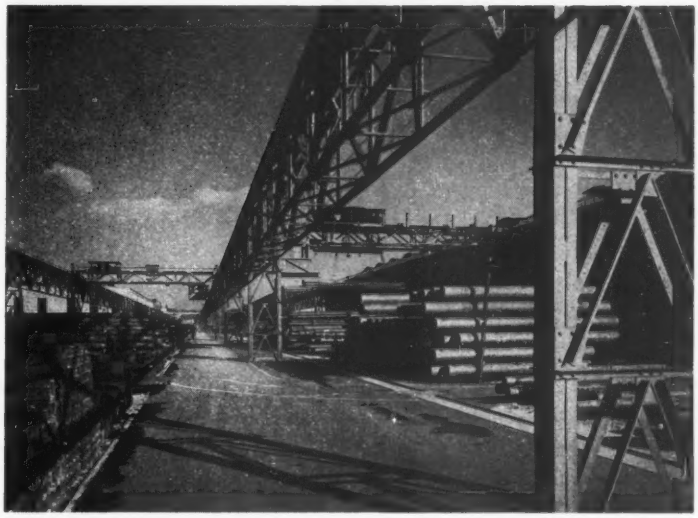
AS KOREAN BOOM FADES

gineering, oil refining, mining and electric power.

One of the darkest spots in the Italian picture is the changing terms of foreign trade. Value of imports went up by 7 to 10 per cent in 1952 over 1951, whereas the value of exports dropped by 13 to 15 per cent. The adverse effects amounted to more than 25 per cent.

Always With Us—Hard-core of unemployment, totaling about 2 million persons, continued in 1952, marking Italy as the European country with the highest unemployment rate. Prolonging that situation are Italian laws which provide almost prohibitive compensation among the penalties which an employer must pay to discharged employees. Employers are thus reluctant to hire employees now whom they may not be able to keep busy in future slack periods and whom they may not be able to fire, either.

Italians look hopefully to the Schuman Plan to help them solve their raw materials problem, particularly coal and coke. After the opening of the common market for coal on Feb. 10, 1953, German coking coal should be more regularly available and at the same prices as those prevailing in other countries. That will be a help in getting Italian metalworking products competitively priced for the common market.



PIPE STORAGE AREA OUTSIDE THE DALMINE TUBE WORKS IN ITALY
. . . pipelines reached Turin this year; Bologna and Genoa in 1953

about 34 per cent between December, 1951, and July, 1952. Import prices slid down only 6 per cent. However, export prices had jumped way up compared with import prices during 1950-51. Much of the 34 per cent decline is actually due to re-adjustment of prices of Sweden's two most important export products, paper and pulp, to more normal levels.

Depression in Reverse—The most striking effects of post-Korean stabilization in Sweden have been the favorable repercussions on iron and steel output. Reduction of employment in other manufacturing industries relieved the severe shortage of manpower in iron and steel works. The supply of raw materials improved compared with the previous year and was adequate for most works in 1952. Exceptions to that rule: scrap, nickel.

As a result of these factors, iron and steel output soared. The largest increase took place in pig iron production where the plant expansion program is nearly complete. During the first eight months of 1952, pig iron output amounted to 720,500 tons compared to 568,700 tons for the same period of 1951.

Steel Output Rises—Production of steel ingots jumped 12 per cent, from 937,000 tons during the first eight months of 1951 to 1,048,000 tons during the same period of 1952. Output of rolled and forged steel rose by about 6 per cent to 668,000 tons.

Tight credit restrictions and uncertainty about future economic conditions have held back some industrial construction. But, an increase in building permits, a rise in employment and a reduction of the time of completion have worked together to affect a sharp increase in housing. This year, it's expected volume of home construction will be 10 per cent higher than in 1951. Further gains are expected in 1953.

Improved Supply — Output has also risen in the engineering industry, the largest consumer of iron and steel in Sweden. Demand, however, tended to decrease late this year and some reduction of backlogs occurred in the mechanical and electrical equipment fields. The most important explanation of this development lies in sharper competition, especially from West Germany, and in added import restrictions imposed by many foreign countries. While a shortage of ship plates reduced output somewhat during 1951, no such difficulties were encountered during 1952. A similar improvement has taken place in the automotive industry.

Thus, the return to competition, both domestic and international, has had a salutary effect in general on Swedish metalworking, and most Swedish businessmen look for the trend to continue next year.

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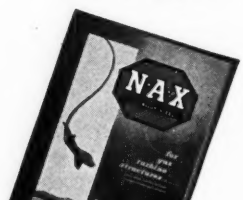

Write for this 16-page booklet on N-A-X AC9115 ALLOY STEEL. It describes the properties and characteristics of this material and offers information on its fabricating and welding properties.

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By H. C. TUTTLE *Detroit Editor*

Mirrors of Motordom

PONTIAC INTRODUCES DUAL-STREAK STYLING
. . . GM division spends $30 million for tool-up and dies

GM's Fisher Body Division reconsiders moving purchasers to Cleveland . . . New Pontiac is introduced with power steering . . . Willys-Overland Motors Inc. hearty at 50

DETROIT

FISHER BODY Division of General Motors Corp. is re-examining its plans for moving many of its Purchasing Division's activities to Cleveland.

That it had such plans was first disclosed in this column June 16, at which time it appeared that the move might be begun this fall. Recently the program had progressed to the point where the man who would head up the Cleveland purchasing organization had been designated, and the schedule called for activating the Cleveland office by about Jan. 1.

Now an "If"—Last week, however, a big "if" was interjected and the purchasing decentralization time schedule was postponed. One reason for the division's current uncertainty over the move is believed to be the reaction which many vital suppliers have had to it. They believe that Fisher's purchasing organization is a model of efficiency as run in the General Motors Building in Detroit and can't understand how the operation will be further improved in the course of a move. The plan is not dead and might become active at any time; but for the moment at least the "why" askers have made the division take another hard look.

Meanwhile, New Pontiac—Invasion of power steering into the low-medium price market was begun last week as Pontiac Motor Division of General Motors introduced its '53 models mounting the GM Saginaw Steering Gear Division device.

Pontiac's "dual streak"-styled cars are completely new in their body and other sheet metal work this year, the tool-up and die cost being set at about $30 million. Basic similarity of the new body to the '52s has been retained, indicating that the stylists in General Motors did not want to chance any radicalism with the now well-selling Chevrolets and Pontiacs which share the same body.

For Looks—Appearancewise, the new models are highlighted by a large, one-piece wrap-around rear window, one-piece curved windshield, and a new side-contour blending the top of the front fenders into the rear.

Giving the rear fender a "kick-up," or flattened out-fin, adds a distinctive touch. A stainless steel rub rail extending from the rear tail light and through the doors joins with a slightly higher trim strip on the front fender.

For Handling—Mechanically the new Pontiac has undergone several notable changes, the emphasis primarily being on suspension improvements and easier steering. A completely new "curve attitude" to reduce the roll tendency of the car when cornering has been achieved by the front suspension changes including redesign of knee action lever and relocation of the pivot points.

Better handling was the goal of this engineering work, but a collateral gain has been in front tire life and lessened tire squeal when turning. A 10 per cent improvement in tire life is said to result when frequent curves are encountered. In addition to changes for curve control, the entire front suspension has been tilted about four degrees back from vertical so that the shock absorbers are better able to soak up jolts.

While steering has been improved by these front wheel changes, the effort required to steer has been further reduced by an increase in over-all steering gear ratio of three points to 25 to 1. Manual effort in the non-powered steering gear-equipped car is said to be 20 per cent less than in the 1952 model. Power steering, of course, would reduce it further.

For Torque—Engine changes in the six-cylinder car have been made to increase torque, the horsepower rating on this engine when used with Hydra-matic transmission remaining at 118 but the de-

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velopment of that power comes at a higher engine revolution. This change is accomplished by use of the same type dual carburetor as is used in the eight, a new intake manifold, new camshaft, combustion chamber change and use of aluminum, instead of cast iron, pistons.

Willys: Rugged as Its Jeeps

The car and truck producer located 55 miles southwest of Detroit at Toledo is one of the several automotive companies which will celebrate its fiftieth anniversary in 1953. As Overland Motor Car Co. it introduced its first car from its factory in Indianapolis. Buying out Pope-Toledo in 1909 and moving its operations to Toledo in 1911, the company has had years of glory and years of despair. But as 1952 closes, Willys-Overland Motors Inc. is ready to begin its golden jubilee year with a flying start.

Turning Point — The company's re-entry into the conventional passenger car market last January with its Aero Willys series marked an important turning point. The filling out of the line with four-door models and other body styles during the next several weeks ought to make it more of a company to be reckoned with.

The adding together of Willys' car and truck output in the first ten months of 1952 puts the company into fifth place industrywide, two ranks higher than it had been in 1951. Its October production was the best it has had since before the war. Its 19,325 cars and trucks that month is no great shakes compared with most of the "big three's" divisions.

Special Talents — But in certain activities it is an outstanding performer. In exports of trucks Willys is in third place and in steel station wagons and four-wheel drive vehicles it is the industry's leader. It is the largest producer of forgings in the automotive industry. Its drop forge division at Toledo is the world's third largest commercial forging operation, and its aluminum forge division at Erie, Pa., ended World War II in the No. 3 spot.

Currently doing a $300-million-a-year business, Willys would be capable of twice that volume with only minor additions to plant and equipment. Its growth since World War II has been marked by the pouring into plant improvement and expansion of $40 million, and its diversification in defense products is greater than it was at the height of the last war.

Auto, Truck Output
U. S. and Canada

	1952	1951
January	409,406	645,688
February	467,691	658,918
March	517,207	792,550
April	576,505	680,281
May	546,673	695,898
June	560,947	653,682
July	246,461	522,858
August	293,722	571,442
September	592,253	505,758
October	645,862	558,971
November	515,000*	480,199
December		402,729
Total		7,179,161

Week Ended	1952	1951
Nov. 1	155,037	118,743
Nov. 8	143,610	117,342
Nov. 15	146,825	120,767
Nov. 22	129,224	80,489
Nov. 29	115,395	119,962
Dec. 6	118,000*	116,932

Sources: Automotive Manufacturers Association, Ward's Automotive Reports. *Preliminary

Seven Divisions — The company operates seven divisions. Four—landing gear, electronics, automotive and drop forge—are at Toledo. The Wilson Foundry Division is at Pontiac, Mich., its aircraft engine division is at Anderson, Ind., in facilities also housing the electronic devices manufacturing. The aluminum forge division is at Erie. The automotive division also operates a final assembly plant at Maywood, Calif.

Largest operation is that of the automotive division which has more than 5.5 million sq ft. Its body shop has a 600-a-day capacity, and a new $6-million stamping shop with 60 presses gives it greater self-sufficiency. Its engine assembly line has a capacity of 1200 four and six-cylinder units a day. It supplies Kaiser-Frazer with four-cylinder engines.

Landing Gear—The newest division—landing gear—is making a product which is no stranger for Willys. It was the sole source for Grumman Hellcat landing gears in 1942. But the division, quartered in over 400,000 sq ft in a $10-million plant, now specializes in landing gear and shock strut production. It is a subcontractor for the C-119 flying boxcar, the complete landing gear unit consisting of 325 parts of which 23 are W-O forgings. It will soon go into production of landing gear components for Beech Aircraft Corp.

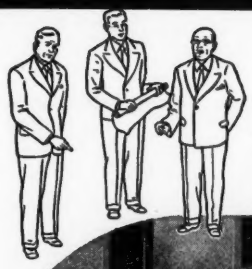
The aluminum forge division consists of 12 major buildings comprising 345,993 sq ft, equipped throughout with machinery less than ten years old. Its size range of forgings runs from a half-ounce to 90 lbs. Its mammoth die shop enables the division to produce about 75 per cent of its own dies.

Electronics — The electronics division with a 38,000 sq ft product development laboratory at Toledo conducts its manufacturing in the Anderson, Ind., plant of 226,000 sq ft which is shared with the aircraft engine division. That plant consists of 11 buildings, valued at $10 million.

All the electronic devices being produced are on the classified list, one being a jeep-mounted mine detector, two others for guided missile work, and the fourth for use with ground-radar installations. The aircraft engine division is currently producing jet turbine buckets and gears for General Electric's J-47 turbojet engine.

Castings—The Wilson Foundry, of more than 250,000 sq ft, produces 450 tons of gray iron castings daily in a $9-million plant. It has seven molding lines on large castings including motor blocks, and two devoted exclusively to 90 mm steel cartridge case output.

The drop forge division, which is located in five buildings having floor space of 192,627 sq ft, is currently being expanded to more than double its present 96 million pound annual capacity. Two of its recently installed steam hammers, rated at 35,000 lb but beefed up to 42,000 lb, make up one-fifth of the number of such capacity hammers in the country. Three-quarters of this division's machinery has been acquired in the last six years. Its steel forgings go into jet plane airframes and engines, tanks, and, of course, Willys vehicles. Its automotive work for its own use takes only about 15 per cent of the plant's capacity.



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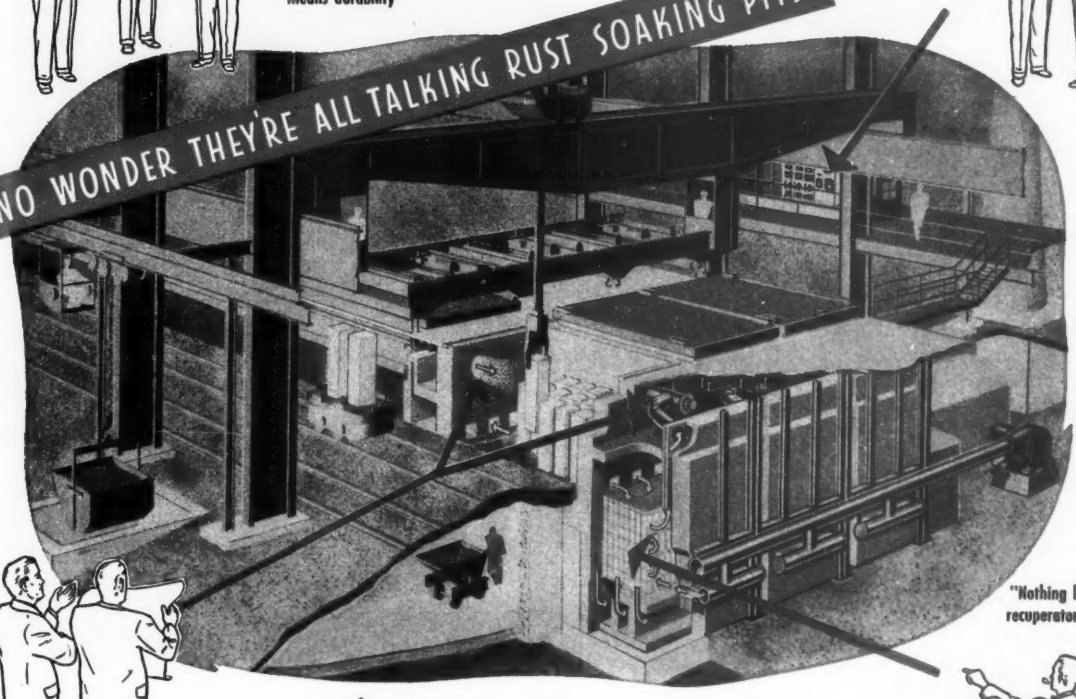

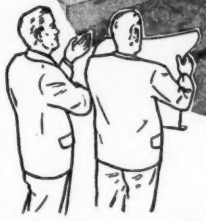

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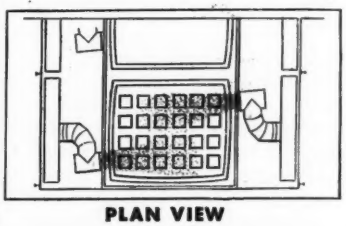
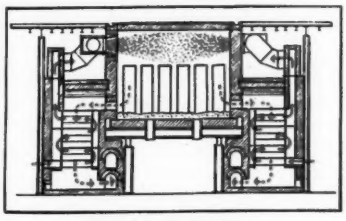


PLAN VIEW



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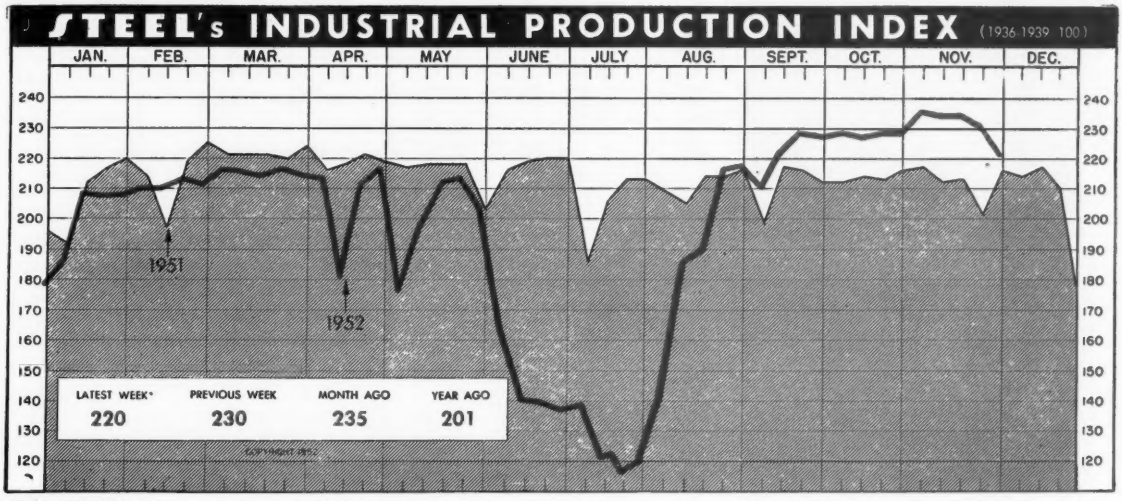
The Business Trend


STEEL's INDUSTRIAL PRODUCTION INDEX (1936-1939 100)
JAN. FEB. MAR. APR. MAY JUNE JULY AUG. SEPT. OCT. NOV. DEC.
240 230 220 210 200 190 180 170 160 150 140 130 120
1951
1952
LATEST WEEK* 220
PREVIOUS WEEK 230
MONTH AGO 235
YEAR AGO 201

*Week ended Nov. 29

Based upon and weighted as follows: Steelworks Operations 35%; Electric Power Output 23%; Freight Car Loadings 22%; and Automotive Assemblies (Ward's Reports) 20%.

Business is holding to a fast pace as it approaches the year end. Manufacturers' optimism rises as change of administrations nears. Index declines less than expected

BUSINESS is approaching the year's end at almost whirlwind velocity, but a brief seasonal decline will probably start sometime next week.

Many assembly lines are moving at record and near-record momentum, although most Christmas production is past. Prime reasons for this high activity are: Rising defense output, improved consumer spending and credit, the drive to recover production lost by the steel strike and expectation of better business conditions after Jan. 20, when the new President takes office.

Mirroring—Mirroring the output rise, the Federal Reserve Board's industrial production index in November climbed above the postwar record set in October. The board estimates that the November index rose 2 points to 229 per cent of the 1935-1939 average. This is 4.6 per cent over production in November, 1951.

Durables producers supplied the rise. Factories and mines since September have averaged about 3 per cent above the levels prevailing during the early months of 1952. Steel and television set production are among the record-breakers. On the other hand, soft goods production is showing a slight decline—as textile mill activity was reduced following a marked recovery in the summer and early fall.

Brief Dip—Idle machinery during Thanksgiving lowered the nation's output, but not down to the levels expected. STEEL's industrial activity index in the week ended Nov. 29 dropped 10 points to 220 per cent of the 1936-1939 average. The index last year fell 12 points to 201 per cent in the Thanksgiving week.

Largest cutbacks during this holiday were in automotive production and freight car loadings. Electric power production fell less than usual, for cooler weather spread across many parts of the U. S. and required electricity for heating. Steelmaking remained at the previous week's level as furnaces poured right on through the holiday.

Steel Output Heavy . . .

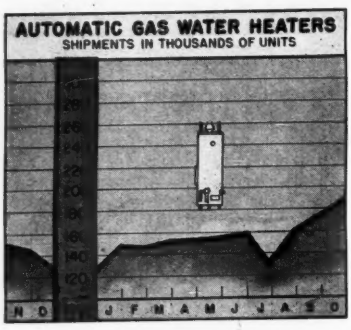
Predicting little lag in demand for some months ahead, steelmakers are maintaining record output. The American Iron & Steel Institute estimates that furnaces in the week ended Dec. 6 poured 2,191,000 net tons of steel.

Full Schedule for Autos . . .

Automakers are planning to end the year with a burst in operations, but the industry total will fall considerably under 1951. Passenger car output in the U. S. in November reached 397,000 units, and producers are laying plans for 410,000 vehicles in December, says *Ward's Automotive Reports*. This would bring the year's total for the U. S. to 5,338,809 vehicles, or more than 1 million units under passenger car assemblies in 1951.

Truck producers are also slated to boost output. Truck output in the U. S. in December is expected to attain 120,000 units, up 10,000 units from November. By Dec. 1, the industry rolled out 1,087,000 vehicles, or 243,500 units under truck production in the first 11 months of 1951.

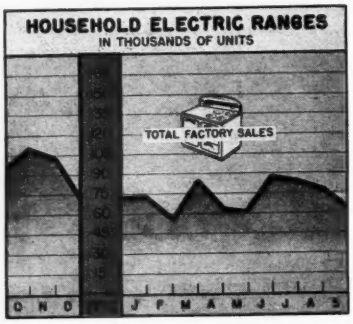
Thanksgiving forced automotive production down, but some of the lost output was regained by overtime operations later in the week. U. S. companies in the week ended Nov. 29 turned out 108,670 passenger cars and trucks, compared with 123,531 units in the previous week. Canadian companies, celebrating their Thanksgiving earlier this fall,



Automatic Gas Water Heaters
Shipments in Units

	1952	1951	1950
Jan.	148,700	225,600	131,600
Feb.	145,800	213,400	156,500
Mar.	153,300	223,300	172,800
Apr.	153,300	199,400	176,400
May	155,300	167,400	195,200
June	159,000	131,500	207,100
July	131,300	102,400	197,500
Aug.	161,500	124,400	259,800
Sept.	177,300	130,900	222,600
Oct.	190,800	148,800	235,100
Nov.	.....	143,400	206,000
Dec.	.....	127,200	202,500
Total	.....	1,931,200	2,363,100

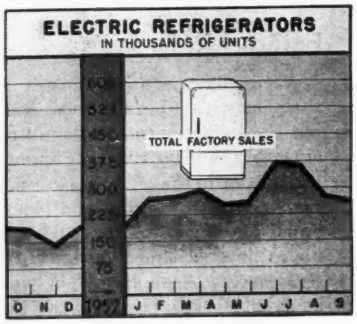
Gas Appliance Mfrs. Assn.



Household Electric Ranges
Total Factory Sales—Units

	1952	1951	1950
Jan.	72,830	130,316	97,925
Feb.	55,728	121,585	118,989
Mar.	83,485	159,865	145,417
Apr.	62,746	118,823	132,859
May	61,209	106,685	145,498
June	88,063	106,589	158,534
July	84,325	80,530	130,505
Aug.	77,282	84,042	132,243
Sept.	64,260	93,551	156,216
Oct.	.....	109,043	130,452
Nov.	.....	101,476	129,384
Dec.	.....	72,140	124,360
Total	.....	1,244,645	1,602,382

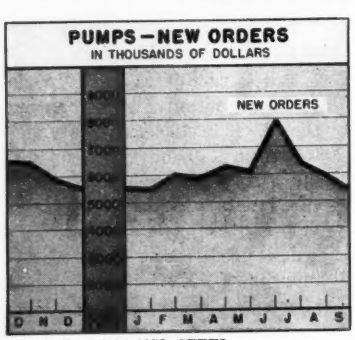
National Electrical Mfrs. Assn.



Electric Refrigerators
Total Factory Sales—Units

	1952	1951	1950
Jan.	275,297	465,903	375,856
Feb.	277,986	403,035	461,256
Mar.	298,092	558,503	586,293
Apr.	255,009	409,887	546,279
May	256,378	309,722	542,856
June	374,199	261,298	549,740
July	366,372	163,922	507,029
Aug.	272,985	165,309	518,359
Sept.	257,362	193,929	535,002
Oct.	.....	191,519	420,431
Nov.	.....	147,394	411,201
Dec.	.....	195,403	394,288
Total	.....	3,465,824	5,848,579

National Electrical Mfrs. Assn.



Pumps, New Orders
In Thousands of Dollars

	1952	1951	1950
Jan.	5,517	6,477	2,586
Feb.	6,020	6,480	2,938
Mar.	5,925	7,654	3,313
Apr.	6,354	7,583	3,376
May	6,140	6,371	3,668
June	7,957	6,852	4,153
July	6,299	8,358	4,080
Aug.	5,921	5,911	6,429
Sept.	5,258	6,552	5,191
Oct.	....	6,506	4,985
Nov.	....	5,908	5,961
Dec.	....	5,553	6,720
Total	....	80,175	53,400

Hydraulic Institute.

Charts Copyright 1952, STEEL.

Issue Dates on other FACTS and FIGURES Published by STEEL

Construction .....Nov. 24	Gear Sales .....Nov. 17	Radio, TV .....Oct. 6
Durable Goods ....Sept. 22	Gray Iron Castings..Nov. 3	Ranges, Gas .....Dec. 1
Employ. Metalwkg. Oct. 27	Indus. Production..Nov. 17	Steel Castings ....Nov. 3
Employ. Steel .....Oct. 27	Ironers .....Nov. 10	Steel Forgings ....Oct. 20
Fab. Struc. Steel...Oct. 27	Machine Tools ....Nov. 10	Steel Shipments ...Nov. 3
Foundry Equip. ....Nov. 24	Malleable Castings..Nov. 3	Vacuum Cleaners..Nov. 10
Freight Cars .....Nov. 24	Prices, Consumer ..Dec. 1	Wages, Metalwkg..Nov. 17
Furnaces, Indus. ..Nov. 24	Prices, Wholesale ..Dec. 1	Washers .....Dec. 1

pushed their output to 6725 assemblies from 5693 passenger cars in the previous week.

Combined U. S. and Canadian operations in the week ended Nov. 29 totaled 115,395 units, compared with 129,224 units in the previous week and 119,962 in the week ended Dec. 1, 1951.

Steelworkers' Earnings Up . . .

Steelworkers earnings in September soared to a new record, while the total industry payroll also attained a new peak. The American Iron & Steel Institute—basing its data on reports from 110 companies representing 95 per cent of the industry capacity—says average hourly earnings per wage earner in September rose to a record $2.206, compared with $2.139 in August. The total payroll of the entire industry is estimated at $269.4 million, about $19 million over August. Wage earners worked an average 40.3 hours a week in September, or 2.1 hours over the previous month. Total industry employment reached 673,600 workers, up 13,800 workers from August.

Business Outlook Favorable . . .

Business will continue good through the first quarter of 1953. That's the predicition of the National Association of Purchasing Agents in their monthly survey. The association's members report that their order backlogs are high, though not growing rapidly. Production in November followed this backlog pattern, a normal condition that has been absent during the inflationary spasms following Korea.

November prices showed more stability, although foreign weakness had some effect. Inventories continued downward as delivery promises became more dependable. Purchasers for industry still hold within a 90-day range for buying, although there is a gradual increase from 30-60 days to a 60-90 days policy. Employment continued its rise in November when more defense work moved from the tooling stage into production.

The result of the national election has showed little impact on orders, production and prices. The principal effect is psychological: Greater confidence that inflationary

BAROMETERS OF BUSINESS

	LATEST PERIOD*	PRIOR WEEK	YEAR AGO
INDUSTRY			
Steel Ingot Output (per cent of capacity)[2]	106.0	106.0	103.5
Electric Power Distributed (million kwhr)	7,600[1]	7,971	7,476
Bituminous Coal Output (daily av.—1000 tons)	1,737	1,760	1,696
Petroleum Production (daily av.—1000 bbl)	7,200	7,971	6,232
Construction Volume (ENR—millions)	$203.0	$269.9	$179.3
Automobile, Truck Output (Ward's—units)	115,935	129,224	119,962
TRADE			
Freight Car Loadings (unit—1000 cars)	732[1]	810	822
Business Failures (Dun & Bradstreet, number)	127	167	148
Currency in Circulation (millions)[3]	$30,152	$29,842	$28,742
Dept. Store Sales (changes from year ago)[3]	+9%	0%	+6%
FINANCE			
Bank Clearings (Dun & Bradstreet, millions)	$17,833	$20,300	$14,919
Federal Gross Debt (billions)	$267.2	$265.1	$259.5
Bond Volume, NYSE (millions)	$18.8	$26.0	$13.5
Stocks Sales, NYSE (thousands of shares)	8,112	9,602	6,743
Loans and Investments (billions)[4]	$77.2	$77.0	$72.7
United States Gov't. Obligations Held (billions)[4]	$31.9	$32.0	$31.5
PRICES			
STEEL's Weighted Finished Steel Price Index[5]	181.31	181.31	171.92
STEEL's Nonferrous Metal Price Index[6]	213.2	214.7	234.9
All Commodities[7]	110.1	110.3	113.7
All Commodities Other Than Farm and Foods[7]	113.0	113.0	114.6

*Dates on request. [1]Preliminary. [2]Weekly capacities, net tons: 1951, 1,999,035; 1952, 2,077,040. [3]Federal Reserve Board. [4]Member banks, Federal Reserve System. [5]1935-1939=100. [6]1936-1939=100. [7]Bureau of Labor Statistics Index, 1947-1949=100.

pressures will ease; prices and materials will be decontrolled. Several reports to the association indicate that pigeon-holed expansion and new product plans are being dusted off and reviewed.

Heating Equipment Up . . .

Shipments of gas-fired furnaces, boilers and conversion burners in October set a two-year record, reports Gas Appliance Manufacturers' Association. Furnace shipments totaled 61,800, a 51 per cent jump in October over the like period in 1951. Boiler shipments rose 49.3 per cent over the year to 10,300 units in October, while shipments of gas conversion burners in October rose 37.3 per cent over the same 1951 month to 31,300 units.

Appliances Hit Peak . . .

Demand is rising from the cellar, if not the kitchen. While stove and refrigerators decline, manufacturers of home laundry equipment are finding the consumer desires their products more than ever. The American Home Laundry Manufacturers' Association says that factory sales of household washers in October were the largest since March and sales of automatic tumbler dryers hit an alltime high. October washer sales totaled 327,814 units, compared with 368,445 washers in March, 1951, and 15.5 per cent ahead of unit sales in September. The record October dryer figure was 83,510 units, an advance of 16.8 per cent from September and a whopping 90.9 per cent over sales during October, 1951.

Rubber Consumption Climbs . . .

As automotive production skyrocketed in October, consumption of new rubber followed suit. The Rubber Manufacturers Association says that new rubber consumption in October increased 11 per cent to 117,285 long tons from 105,262 long tons in September. Consumption of natural rubber increased 15 per cent to 44,630 long tons. Synthetic rubber climbed 9 per cent to 72,655 long tons.

Trends Fore and Aft . . .

Strikes in October cost 3.5 million man-days. The bituminous coal strike caused about 25 per cent of this loss . . . Construction activity in the states east of the Rockies during October rose 24 per cent over October, 1951 . . . Demand for crude oil in September totaled 6,462,000 barrels daily. This is 56,000 barrels a day below production.

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stands alone

The Reamer Specialists

LAVALLEE & IDE, INC.

CHICOPEE, MASS.

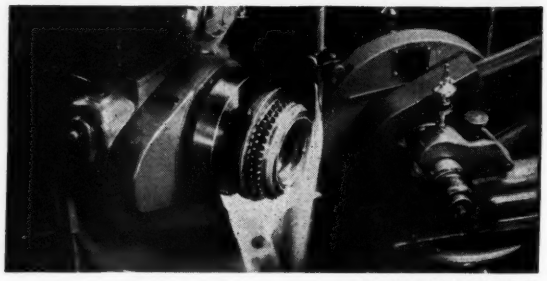
S.E.C.O. SPEEDS MACHINING OPERATIONS, REDUCES REJECTS, INCREASES TOOL LIFE

For any machining operation where an oil of its type can be used, Sunoco Emulsifying Cutting Oil will boost production, reduce downtime for cleaning and tool dressing.

A self-emulsifying petroleum product, S.E.C.O. forms a stable white emulsion when mixed with water. Its cooling and lubricating qualities make it particularly effective in the high-speed precision machining of ferrous and nonferrous metals. S.E.C.O. keeps machines clean, has a pleasant odor, and prevents rusting of parts between operations.

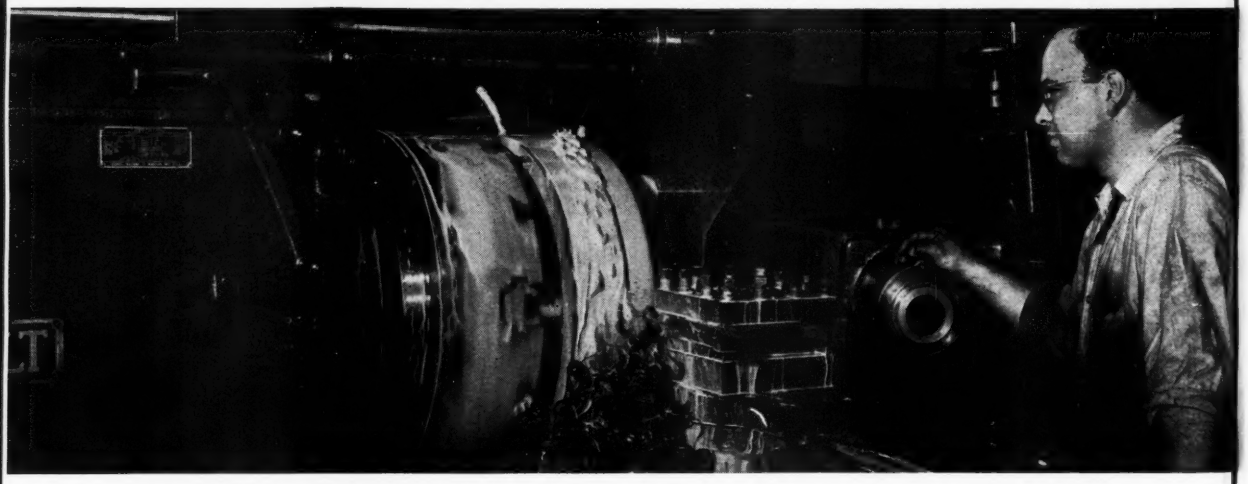
For complete information about S.E.C.O., write SUN OIL COMPANY, Philadelphia 3, Pa. Address Department S-12.

MACHINE: 2" automatic tapping machine • Parts: pipe fittings Metal: malleable iron • Operation: threading and chamfering 1⅛" 45° elbow • Cutting Speed: 75 sfm • Tools: high speed • Production: 306 pieces per hour • Cycle Time: 11¾ seconds • Cutting Oil: 1 part S.E.C.O. to 10 parts water



COURTESY BROWN& SHARPE MFG. CO.

MACHINE: Brown & Sharpe No. 2 Universal Grinding Machine Part: screw machine spindle sprocket • Metal: AISI-C1107 • Operation: grinding 90° included angle • Method: plunge-cut ground periphery of wheel • Grinding Oil: 1 part S.E.C.O. to 40 parts water



MACHINE: Gisholt turret lathe, model 4L • Part: 20" press mold shell, 22⅝" O.D., 6" depth, 20½" I.D. • Operation: turning and boring rough forgings • Materials: 40 to 50 carbon steel • Tools: Firthite carbide • Feed: .012 at 31 rpm • Cut: ½" to ¾" on O.D. and boring • Cutting Oil: 1 part S.E.C.O. to 10 parts water

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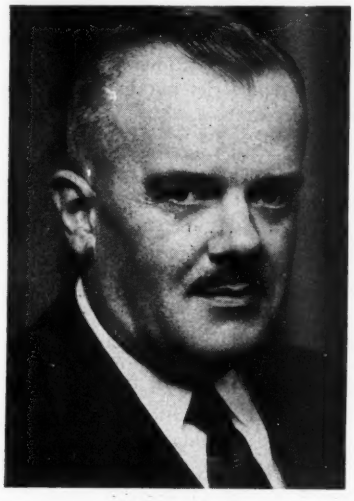
SUN OIL COMPANY, PHILADELPHIA 3, PA. • SUN OIL COMPANY, LTD., TORONTO AND MONTREAL

SUNOCO

Men of Industry



JOHN B. CRAIG
. . . American Bridge purchasing dir.

J. E. PERRY
. . . Continental Can plant mgr.

CHARLES S. NORTHEN
. . . V. P.-sales, U. S. Pipe & Foundry

John B. Craig was appointed director of purchases, **American Bridge Division,** U. S. Steel Co., Pittsburgh. He succeeds **Dan Hammerschmidt,** retired after 52 years of service with American Bridge. Mr. Craig has been assistant purchasing agent.

Harry C. Mason succeeds **George W. Clarkson,** resigned, as New York district manager, **Whitman & Barnes,** division of United Drill & Tool Corp. Mr. Mason formerly was a sales and service engineer working out of the Chicago office. **Joseph Rodecker,** sales representative in the Buffalo area, transferred to the West Coast with headquarters in San Francisco. He takes over the territory formerly covered by the late **B. F. Rohde.**

Flour City Ornamental Iron Co., Minneapolis, elected as officers: **Henry J. Neils,** chairman and treasurer; **W. R. Westphal** president; **Carl R. Schuler, J. A. Hallberg** and **Clarence Seidel,** vice presidents; **Henry E. Neils,** secretary; and **Cornelius H. Lucas,** assistant secretary and assistant treasurer.

John E. Angst, sales agent for **American Car & Foundry Co.** in Chicago, was appointed assistant western sales manager. He continues headquarters in Chicago.

J. E. Perry becomes plant manager of **Continental Can Co.'s** metal container plant at Syracuse, N. Y. He joined the company in 1943 and prior to his present assignment was eastern division manager of quality control.

Cribben & Sexton Co., Chicago, appointed **Alan T. Mann** manager of advertising and sales promotion to succeed **John J. Brandt** who resigned to enter business in Detroit.

John K. Northrop, president, **Northrop Aircraft Inc.,** Los Angeles, has retired after 36 years in aviation. **Oliver Echols,** chairman of the board, will also serve as president of the company.

Harnischfeger Corp., Milwaukee, promoted **William S. Burdick** as vice president-engineering. He had been chief engineer for large excavators.

Dr. Robert Adler was appointed associate director of research for **Zenith Radio Corp.,** Chicago.

Herbert E. Brumder was made general manager, Downingtown Iron Works, Downington, Pa., division of **Pressed Steel Tank Co. Milton F. Kroesch** was named chief engineer of the Milwaukee operations of the company.

Charles S. Northen, vice president-sales, Sloss-Sheffield Steel & Iron Division, was elected to the same position with **United States Pipe & Foundry Co.,** parent concern, Burlington, N. J. **Robert E. Garrett,** assistant to the president of Sloss-Sheffield, was made vice president and comptroller of U. S. Pipe. Mr. Northen assumes the position held by **D. B. Stokes,** retiring after 42 years with the company.

Samuel Horelick has retired as chairman of the board of **Pennsylvania Transformer Co.,** Canonsburg, Pa. He formed the company in 1929 in co-operation with W. E. Kerr. Mr. Horelick served as president until 1949 when he became chairman.

Furnace Engineers Inc., Pittsburgh, elected **James B. Shea** president and **C. R. McCloskey** as executive vice president.

Harold C. Piper, with **Borg-Erickson Corp.,** Chicago, since 1936, was elected vice president in charge of manufacturing.

In the production department of **Jones & Laughlin Steel Corp.,** Pittsburgh, **W. P. Getty** was made general manager of steel works; **C. C. Henning,** general manager of ore mines and quarries; and **E. R.**

Cooper, general manager of coal mines.

Jack O. Abney is the new associate works manager for **Penn Metal Co. Inc.,** in charge of research and development at its Parkersburg, W. Va., plant. He formerly was with the Chevrolet Division of General Motors Co. in Indianapolis.

Philip H. Kreuscher joined **Tube Reducing Corp.,** Wallington, N. J., as divisional engineer. He had been with U. S. Steel Co. as design and construction engineer.

J. W. Roche was made assistant general superintendent of **Kaiser-Frazer Corp.'s** flight test department, Willow Run, Mich.

J. Clark Ryan was elected president and treasurer of **Forbes & Wagner Inc.,** Silver Creek, N. Y. He succeeds the late **Henry C. Forbes.** Mr. Ryan has been executive vice president.

Flexitallic Gasket Co., Camden, N. J., appointed **A. T. Erickson** executive vice president. He previously was with Day & Zimmermann Inc., engineers, Philadelphia.

H. L. Richardson was named divisional sales manager to head the Pittsburgh office recently opened by **Research Corp.** It will service western Pennsylvania and West Virginia and will handle engineering services in that area.

American Safety Razor Corp., Brooklyn, N. Y., elected **Wesley A. Songer** vice president and general manager of operations. He previ-

E. PAYSON BLANCHARD
joins Morey Machinery Co. Inc. New York, as director of sales, New Domestic Machinery Div. Noted in STEEL, Dec. 1 issue, p. 72

ously served as a principal of the management consulting firm of Rogers, Slade & Hill. Prior connections include both the appliance and merchandise department and executive department of General Electric Co.

Fremont L. Rogers becomes director of industrial relations at **Karp Metal Products Co. Inc.,** Brooklyn, N. Y. He formerly served in the same capacity with Durez Plastics & Chemical Co. and Colts Mfg. Co.

Woodrow W. Oliver was appointed Cleveland district purchasing agent, **American Steel & Wire Division,** U. S. Steel Co. He succeeds **Otto C. Langenhan,** retired after 45 years of service in the purchasing field. Mr. Oliver goes to his new post from Worcester, Mass., where he has served for two years as eastern district purchasing agent for the division. He is succeeded in that position by **Elmer R. Johnson,** assistant district purchasing agent at Worcester.

Jack H. Gill was appointed assistant manager, industrial division, in the general sales department at **Caterpillar Tractor Co.,** Peoria, Ill.

At **Whitney Chain Co.,** Hartford, Conn., **W. H. Whitney** retires as president but continues to serve as chairman in which position he will be active in over-all direction of the company's policies and affairs. **Richard F. V. Stanton** becomes president-general manager. He will be active on the board and will also serve as chief executive officer of both Whitney Chain and Hanson-Whitney Divisions. Mr. Stanton recently resigned as vice president in charge of manufacturing at American Machine & Foundry Co. where he served in various capacities for the last four years. Previously he was vice president and assistant general sales manager, Pratt & Whitney Division, Niles-Bement-Pond.

A. F. Siers was appointed director of motor truck engineering, **Twin Coach Co.,** Kent, O. He previously served as chief development engineer in the company's truck division. He now will be in charge of engineering details relative to

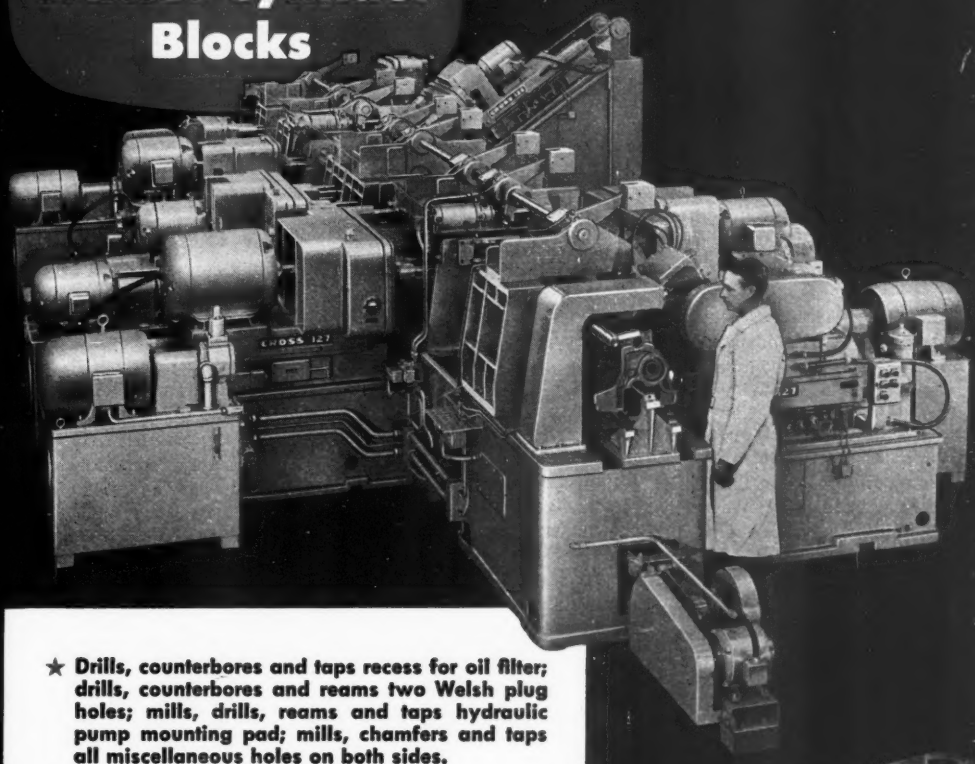
WESLEY A. SONGER
. . . joins American Safety Razor Corp.

WOODROW W. OLIVER
. . . AS&W Cleveland purchasing agent

A. F. SIERS
. . . motor truck eng. at Twin Coach

Mills, Drills, Bores and Taps Tractor Cylinder Blocks

Another Transfer-matic by Cross



- ★ **Drills, counterbores and taps recess for oil filter; drills, counterbores and reams two Welsh plug holes; mills, drills, reams and taps hydraulic pump mounting pad; mills, chamfers and taps all miscellaneous holes on both sides.**
- ★ **71 pieces per hour at 100% efficiency.**
- ★ **13 stations—one for loading; one for milling; six for drilling, boring and reaming; one for tapping; four for inspection.**
- ★ **Hydraulic power operated transfer mechanism moves work from station to station.**
- ★ **Other features: Construction to J.I.C. standards; automatic chip conveyor; automatic air-oil tap lubricating and cleansing with each cycle; automatic, gravity operated cam clamping; automatic retraction for milling cutters during return stroke.**

Established 1898

THE CROSS CO.

DETROIT 7, MICHIGAN

Special MACHINE TOOLS

ERNEST W. MARCHAND
. . . V. P.-operations, Evans Products

WILLIAM D. LAMONT
. . . div. sales mgr. at Liquid Carbonic

WAYNE H. KUHN
. . . Fairfield Eng. gen. sales mgr.

Fageol Super Freighters and Fageol Vans, new truck lines recently introduced by the company.

Ernest W. Marchand was elected vice president in charge of operations, **Evans Products Co.**, Plymouth, Mich. He goes to Evans from Highway Trailer Co., where he held a similar executive position.

Myron W. Krueger was elected vice president and **Henry A. Federa** secretary of **Raymond Concrete Pile Co.**, New York. Mr. Krueger continues as treasurer and a director. Mr. Federa formerly was secretary, general attorney and a director of Orinoco Mining Co., U. S. Steel Co. subsidiary.

Liquid Carbonic Corp., Chicago, appointed **William D. Lamont** as sales manager of its Gasweld Division. Before joining Liquid, Mr. Lamont was president of Detroit Industrial Welding Co.

William T. Stephens, formerly vice president-general manager, Valve Service Co., Willoughby, O., has joined **Parker Appliance Co.**, Cleveland, as staff engineer in charge of the development program of industrial hydraulic equipment.

Loren C. Miller was appointed assistant works manager, Bliss Steel Fabricating Division, **Austin Co.**, Cleveland. For the last year he has been in charge of structural design at Bliss.

Wayne H. Kuhn, formerly contract division sales manager, **Fairfield Engineering Co.**, Marion, O., was appointed to fill the newly created post of general sales manager. **W. R. Reichenstein** takes over as sales manager, contract division. He formerly was chief engineer and is replaced in that position by **Bruno Rybicki**, who has been with U. S. Steel Co. as chief design engineer, coal division.

C. B. Campbell was appointed consulting engineer and **J. R. Carlson** as manager of engineering for the steam division of **Westinghouse Electric Corp.**, Pittsburgh. Mr. Campbell has been manager of engineering since 1944.

OBITUARIES...

Thomas W. Greene, 57, development engineer of **Linde Air Products Division**, Union Carbide & Carbon Corp., New York, died Nov. 29. He was the author of many technical papers on welding and stresses.

Marvin S. Jacques, 50, retired president, **Alloy Steel Gear & Pinion Co.**, Joliet, Ill., died Nov. 26 on a train en route to Joliet from Florida.

Harold M. Thorell, 50, sales manager of **Trade-Wind Motorfans Inc.**, Los Angeles, died Nov. 19.

William E. Robertson, 86, a pioneer in civil engineering, died Nov. 10 at his home in El Paso, Tex. He founded the El Paso Bridge & Iron Co. and was president of Virginia Bridge & Iron Co., now a subsidiary of U. S. Steel Co.

Ralph A. Kappen, 61, assistant superintendent of the production control unit of **Globe Steel Tubes Co.**, Milwaukee, died Nov. 26.

Olin M. Richardson, former assistant to the vice president in charge of production of **American Machine & Foundry Co.** in Richmond, Va., died recently.

Gunnar E. Karlstrom, 49, general manager, **Christensen Diamond Tool Co.**, Detroit, died Nov. 22.

William Parker, 65, manager of the Charlotte, N. C., district of **Allis-Chalmers Mfg. Co.'s** general machinery division since 1938, died Nov. 24.

Kenneth B. Lewis, 69, a designer of wire mills in this country and abroad, died Nov. 26 of a heart ailment.

E. C. Jarvis, 68, president and one of the founders of **Jarvis Engineering Works**, Lansing, Mich., died Nov. 4.

John L. Petitt, 50, assistant manager of purchases for **Eaton Mfg. Co.**, Cleveland, died recently.

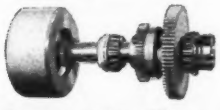
Mark L. Burrell, 66, director of purchases for **Federal Motor Truck Co.**, Detroit, died Nov. 24.

KEARNEY & TRECKER MILWAUKEE CH MILLING MACHINE COMBINES SPEED, ACCURACY AND POWER

CH MILLING MACHINE FEATURES THAT HELPED DO THIS JOB BETTER

Speeds and Feeds—*24* speed changes from *15* to *1500* rpm. Automatic protecto-mesh mechanism permits non-clash shifting during speed changes. *32* changes from ¾" to *90"* per minute meet requirements of new metals and cutting tools.

Greater rigidity — Heavily ribbed, box section, sponson construction. Proper weight distribution absorbs vibration.



Greater cutting efficiency through a train of heavy duty, wide-faced, forged steel gears, hardened and specially processed.

Smoother feed performance through a heavy duty 2" dia. table feed screw. 23% greater bearing contact between screw nut for longer screw life and accuracy.

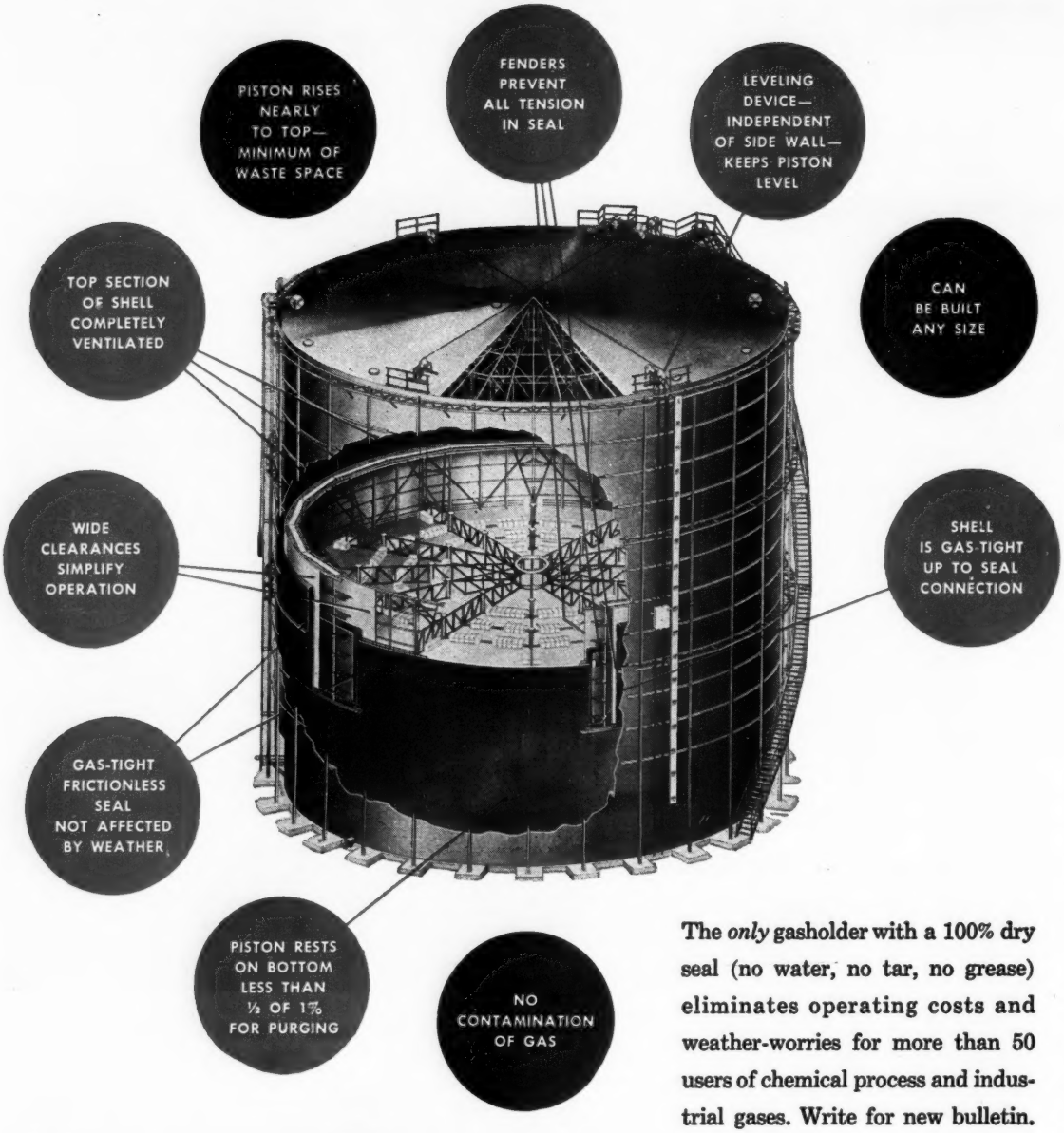
Greater horsepower — independent drives for spindle, feed and rapid traverse, and coolant. 15 hp to spindle . . . 3 hp for feed and rapid traverse... ¾ hp for coolant.

Here's a job handled on a new CH-4 Machine

Job: Menasco Mfg. Co., Burbank, Cal. Straddle Milling Drag Links
Machine: No. 4, Model CH, Plain Style
Part: Shock strut for landing gear cylinder
Cutter: High speed steel inserted tooth
Cutter Speed: 18 rpm, 15/32 ipm feed
Chip Load: .005"
Material: 4140 Steel forging, 43 Rockwell

Investigate the new CH line of milling machines. These and other features are job proven to give you cost-cutting results plus greater productivity, better finished products. Contact our nearest representative or write: Kearney & Trecker Corp., 6784 W. National Avenue, Milwaukee 14, Wisconsin.

KEARNEY & TRECKER MILWAUKEE MACHINE TOOLS


PISTON RISES NEARLY TO TOP—MINIMUM OF WASTE SPACE
FENDERS PREVENT ALL TENSION IN SEAL
LEVELING DEVICE—INDEPENDENT OF SIDE WALL—KEEPS PISTON LEVEL
TOP SECTION OF SHELL COMPLETELY VENTILATED
CAN BE BUILT ANY SIZE
WIDE CLEARANCES SIMPLIFY OPERATION
SHELL IS GAS-TIGHT UP TO SEAL CONNECTION
GAS-TIGHT FRICTIONLESS SEAL NOT AFFECTED BY WEATHER
PISTON RESTS ON BOTTOM LESS THAN ½ OF 1% FOR PURGING
NO CONTAMINATION OF GAS

The *only* gasholder with a 100% dry seal (no water, no tar, no grease) eliminates operating costs and weather-worries for more than 50 users of chemical process and industrial gases. Write for new bulletin.

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CONVERSION EASY—OFTEN ADDS CAPACITY

Your old gasholder can be converted to a Wiggins type with all the Wiggins advantages.

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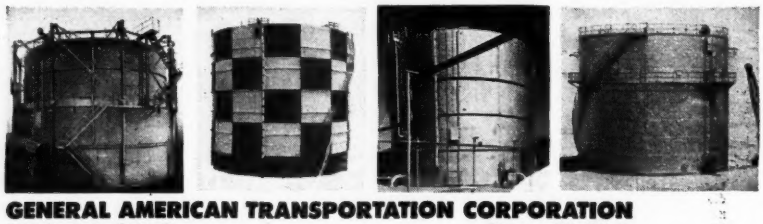

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135 South La Salle Street • Chicago 90, Illinois
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In Canada: Toronto IronWorks, Ltd., Toronto, Ontario

Production AND Engineering NEWS AT A GLANCE

LOUDSPEAKER CLUTCH—A clutch developed for instrument applications by the National Bureau of Standards works on the same moving coil principle as the electrodynamics loudspeaker of an ordinary radio receiver. It is activated by application of direct current to a coil located in a constant magnetic field. Force resulting from the interaction of the coil current and the magnetic field moves the coil and causes the clutch output disk to be pressed against the rotating input members. In the experimental model full output shaft torque of 10 ounce-inches maximum was attained in less than a third of a millisecond.

TOUGHER ALUMINUM—Two new alloys being made by Alcoa are highly resistant to corrosion and designed particularly for use in welded assemblies, tanks and highway transportation equipment. Both alloys, XA54S and XC56S, permit using section thicknesses half or less than those required by other aluminum alloys commonly used for the same jobs. Both alloys are weldable using inert gas metal arc process or the semiautomatic inert gas metal arc process. Welds are ductile and have high elongation.

LOOKING FOR TROUBLE—Handling orders that would be migraine to most plants is the bread and butter of American Silver Co. Instead of a tonnage basis they operate on poundage. When they were told to convert from jewelry to defense or go out of business, they found their production rate of 30 fpm was hardly a production rate. With some new equipment added, notably a Sendzimir mill, the precision rolled thin metal is coming out of the plant at 300 fpm. Here's the story of a firm whose business is the manufacture of thin strip—most men's poison. p. 94

GLASS FOR DIES—The Ugine Sejournet process may extend its field of influence beyond extrusion of steel shapes. Several die stamping companies are casting an interested eye in direction of glass lubricants. They want to investigate possibilities of using glass lubricants to prolong die life.

SCRAP ON THE MOVE—At Fisher Body's Grand Rapids plant a gigantic and intricate scrap conveyor system removes a half million pounds a day into balers and on into freight cars. Backbone of the system is the main conveyor, 1145 feet long. Twenty collecting conveyors tunnel under the rows of presses and feed the main line. The total belt footage of the main conveyor exceeds 2300 feet. Collector conveyors have an aggregate belt length of 4769 feet. p. 100

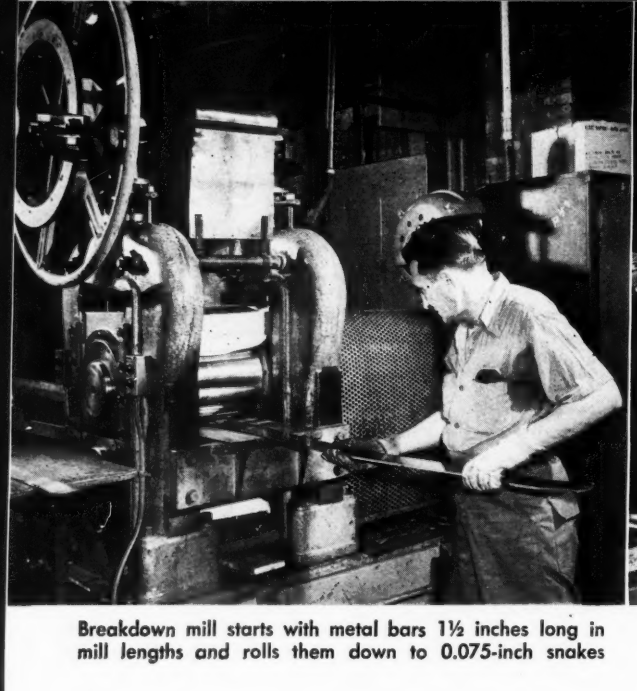
WATER ACTIVATED BATTERY—A special battery evolved by a British firm is designed to replace the dry cells normally used for lifebuoy lights. It can stand for years without attention in all climatic conditions and is activated only after the lifebuoy is launched. A soft soldered strip is torn away just above the battery compartment permitting water to enter when the unit hits the sea. Dry charged plates are housed in an open end plastic container and are activated when they come into contact with either fresh or salt water. Capacity is sufficient to keep the lamp burning for six hours. Manufacturing costs are low, battery is not re-usable.

NEED ANY INDIUM?—Indium metal is used in applications that are highly specialized but important to many branches of industry. General tone of a report indicates that more of the metal will be available. Chief application of the metal has been in aircraft sleeve bearings. Preliminary investigation indicates that the use of indium in ferromagnetic Heusler alloys may prove to be a promising field. Indium additions to titanium give some increase in strength with a slight decrease in ductility. It is possible usable titanium-indium base alloys can be developed. p. 98

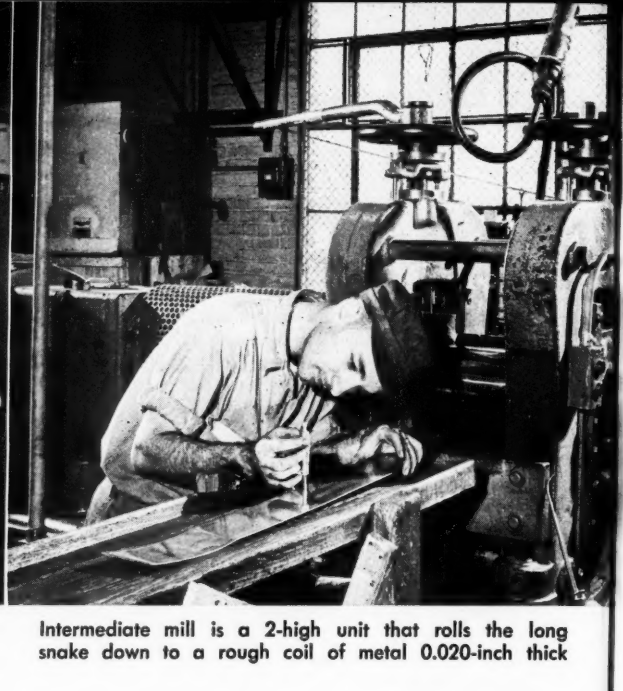
ELECTRONICS AND STEELMAKING—Kaiser Steel Corp. is using a beta-ray gage on the continuous tinning line at its Fontana plant. This noncontacting gage continuously and automatically monitors the thickness of the tin plate as it passes through the line. General Electric and Kaiser engineers also introduced an improvement on the sheet classifier whereby different flights of the classifier can be shut down and jogged to clear up a cobble; then re-accelerated without shutting down the line. This greatly reduces the amount of plate formerly damaged when the line had to be stopped.

CORROSION INHIBITOR—Automatic fire extinguishing systems on aircraft save lives of many pilots and minimize damage to the planes themselves. Until recently there has been a drawback due to the corrosion of aluminum tubing that carries fluid to vital points after actuation, particularly in the low points. Aluminum has to be used since weight is an important consideration. Purging after discharge didn't guarantee freedom from chemical attack. A new inhibitor that eliminates the corrosive effect of CB fire extinguishing liquid on aluminum tubing through chemical stabilization is being included in all shipments by a leading fire extinguisher manufacturer.

BELT SAVER—Worn out and loaded abrasive belts used for grinding everything from aluminum to stainless are being reclaimed by pressure blasting. While specific figures are not available, it is estimated that the worn belts can be used again for half their original life.



Breakdown mill starts with metal bars 1½ inches long in mill lengths and rolls them down to 0.075-inch snakes



Intermediate mill is a 2-high unit that rolls the long snake down to a rough coil of metal 0.020-inch thick

Custom Mill Tackles Production Headaches

Handling orders for pounds instead of tons American Silver has built its business on jobs the big mills don't want to handle. Precision is their business

By S. W. BAKER
Associate Editor

MINIATURIZED metalworking may be mass production to a fabricator, but often it's a migraine to a purchasing agent and a nuisance to a rolling mill.

To turn out 100,000 instrument diaphragms from 0.0015-inch strip for example, only about 50 pounds of metal are needed. That 50 pounds must be rolled to exacting tolerances. Then too, engineering departments often dream up some tough size or tolerance of ultra-thin metal that isn't easily obtainable and blithely turn the specs over to the purchasing agent to fill. Here his nightmare begins: Most rolling mills won't take orders for less than 1000 pounds or for thicknesses below 0.005-inch.

Wanted: Poison — Someone was destined to build a business on these headaches. So it was that American Silver Co., Flushing, N. Y., formed an industrial division to custom-roll ultra-thin and high precision strip. "Another man's poison is our food," is the way Monroe Sherman, American Silver's president, puts it. "We've collected under one roof unwanted business from every rolling mill in the country."

Parlaying misfortune into fortune by moving into a domain generally conceded to the industrial giants, this small company brought new bloom to its controls-wilted business of rolling metals for the jewelry, optical and pen-pencil industries. In this civilian field — where precision tolerances are mandatory — American Silver hit its stride in 1949 when it developed a process for producing a superior mirror finish on rolled gold. But the guillotine dropped soon after Korea, when M-12 and M-14 restricted nonessential decorative use of metals.

Denouement — When NPA told him to convert to defense or go out of business, Mr. Sherman took stock of company facilities and their possibilities. He found standard commercial tolerances in jewelry metals were regarded as precision tolerances in electronics manufacture. And the bustling instrument, electronics and aircraft industries were continually finding new ways to miniaturize their products—many of which required ultra-thin strip.

Transition to custom rolling wouldn't be easy, the company found. Equipment on hand was much too slow. Mills rolling jewelry metal (from 100-ounce ingots)

run at only 30 fpm—hardly an industrial rate. They could produce strip only 4 inches wide, while industry demanded double that width.

Buying Spree—Armed with an Air Force priority, American Silver went after the equipment needed. Key purchase was a model ZR 15-8½ Sendzimir cold strip mill that can roll strip stock from 3 to 8 inches wide at 300 fpm. About a dozen of these 12-high units are in use today, but this installation is the only one devoted exclusively to custom rolling, says A. I. Nussbaum, Industrial Division manager.

The model ZR 15-8½ can roll strip down to 0.0005-inch from a maximum starting thickness of 0.060-inch. Number of passes required and thinness obtainable depend on the metal rolled. Electrical alloys for example can be rolled to between 0.001-inch and 0.0005-inch, while 70-30 brass can easily be rolled to the maximum thinness. A typical reduction schedule—on 302 stainless annealed at 0.008-inch—reads like this, in mils: 8, 5, 4, 3, 2.6, 2.2, 1.8, 1.4, 1.2, 1.0.

Beefed Up — Because company must work with a wide variety of strip metals, special features were incorporated in the Sendzimir. Mill power had to be adequate for taking heavy passes at high speeds on such hard-to-work metals as stainless and beryllium copper. Thus both mill and winder drives were equipped with 20-hp motors—most powerful drive to date on this size and design Sendzimir. Manual control is used to attain infinitely variable speeds from 0 to 300 fpm. Model has no controlled acceleration or deceleration system.

Tension control system features a Reliance V-S drive that maintains tension at any value between 100 and 3000 pounds—a 30:1 ratio. Tensiometer consists of mechanical linkage with a billy roll over which strip passes. Movement of linkage is balanced by compressed air cylinder unit. Desired tension is set by varying linkage ratio and adjusting air pressure over 0-80 psi range.

No Hunting—Electronic V-S unit controls winder motor torque. Signals come from reactor having iron core moving in relation to tensiometer linkage arm. Over full range of available tension, no hunting is experienced, company finds. Weight capacity of coil is 100 pounds per inch of width, allowing an 800-pound maximum coil. Over the 10-inch steel drum winder a 24-inch maximum OD coil can be wound.

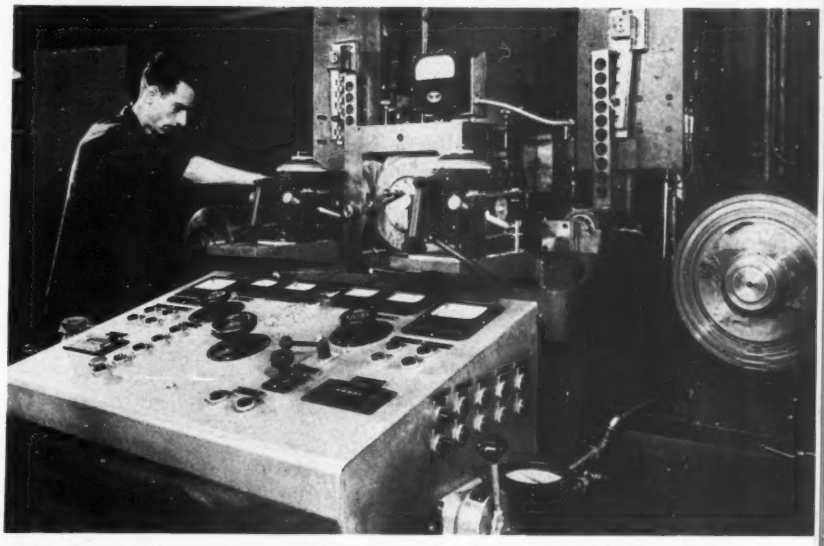
When mill is in operation, oil flows at a maximum 7 gpm through the compact safe-like housing from a 200 gallon tank in mill base. Oil viscosity at room temperature is 100. Strip wipers like welding hose are used on this machine. For rolling to sizes below 0.0005-inch (thicknesses below 0.0002-inch have been successfully rolled on a ZR 32-4 Sendzimir), a secondary lubrication system would be necessary to prevent heavy oil film from causing coil to telescope.

Versatility — The 0.468-inch diameter work rolls can be changed in less than five minutes. Selecting appropriate shape drive and work rolls is only adjustment necessary for handling different widths. The four drive rolls can be changed in ten minutes because of the cluster design.

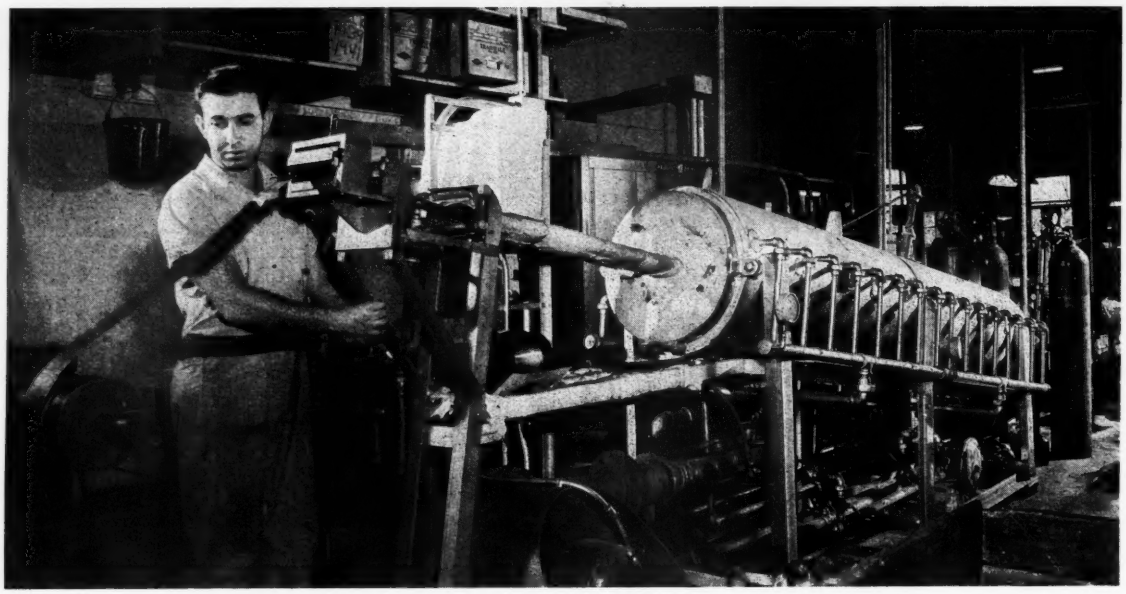
With small work roll diameters, heavy reductions can be taken without intermediate anneals on hard-temper strip. If half-hard or soft tempers are ordered, strip is taken off mill, annealed and given final temper pass either on the Sendzimir or on a 2-high or 4-high mill. Company finds Sendzimir most economical on 40 per cent minimum reductions to full hard temper rather than on slight reductions needed for lower tempers.

Feeder Mills — Supporting the Sendzimir is an array of 4-high and 2-high mills. For a runout or intermediate mill, a 4-high normal-reversing Fenn mill was added for rolling down to about 0.002-inch. Work rolls are 1⅞ inches diameter by 8 inches wide and backup rolls are 8 x 8 inches. Unit is powered by 25 hp on main mill and 10 hp on winder. Louis Allis Adjusto-Spede drive with eddy current clutch delivers infinitely variable speed range of 0 to 300 fpm with constant tension.

For a breakdown mill, a 2-high Standard Machinery Co. unit was selected. A powerful machine, it has a 30-hp constant speed motor and alternating current drive. Rolls are 10½ x 14 inches. Finishing mills are from Standard and from H. J. Reusch Machine Co. They have 5 x 8-inch rolls and can deliver 7½ hp at 30-70 fpm. Frequent roll changes, particularly on finishing passes, must be made to produce the near-mirror finish on the strip. Rolls get an extremely fine-grained finish and are generally super-finished on a special lapping machine. This operation is considered so vital a company secret Mr. Sherman won't talk about or show it to outsiders. Wiping



This cluster mill employs 0.468-inch work rolls. Strip, 0.002-inch thick is rolled down to thickness of 0.0005-inch with extremely tight tolerances



Annealing plays an important part in precision strip manufacturing process. All annealing is performed in continuous atmosphere type furnaces

pads, often soaked in alcohol or kerosene, lubricate work rolls and keep them clean, as even a fleck of dust could damage the finished product.

Annealing's the Secret—Several continuous atmosphere annealers and high-precision slitters rounded out the project. "Secret of precision rolling is annealing," says Monroe Sherman. "The same amount of heat must be put in every running inch of metal." Thus no ultra-thin strip is annealed in coils at American Silver.

Experimenting with annealing units, the company's engineers built one to specifications that takes the strip continuously through gas chamber, water quench, acid dip and rinse. Heart of the device that pulls the strip through this process without marring the metal: A chain-driven Sears-Roebuck washing machine wringer.

Ready To Roll — Thus equipped the company started cold rolling to specifications such metals as stainless and high-carbon steel, brass, phosphor-bronze, invar, beryllium copper, nickel-silver and aluminum. Success is reported also in rolling titanium, tantalum, 40 per cent beryllium-aluminum alloy, zirconium and Ti-75A alloy.

Regularly rolled now are thicknesses of 0.0005-inch, to tolerance of plus-minus 0.0001-inch — about 100 times thinner than the vertical bar of the letter I in this type. Some conversion work comes in. It isn't solicited strongly, but taken on only as an accommodation to help someone work off high inventories or when the metal to be rolled can't be obtained elsewhere.

How To Measure—In establishing exacting tolerance limits, the company and its customer must first get together to decide how measurement is to be made. When rolling metal to one-sixth the thickness of a human hair, a slight difference in measuring methods can

Toy-like in size, this Sendzimir mill performs an important function in rolling ultra thin strip for instruments, electronic applications

Precision slitting equipment cuts precision rolled strip. Tolerances as close as ±0.001-inch can be obtained in widths from 0.125 to 9 inches

cause a large amount of trouble.

Pratt & Whitney Magnetic flying micrometers calibrated in 0.0001-inch divisions are used on the Sendzimir. To double check on the flying mikes—though found ideal for the job they fall off occasionally and need resetting—the inspection department makes use of Federal dial gage micrometers reading to 0.0001-inch.

Oaks and Acorns—Orders raining in today aren't big; it's the small ones on which this business thrives. It doesn't take much tonnage for a $10,000 order to build up either. Tantalum for example, brings about $100 a pound at 0.0005-inch. Delivery time *averages* about two weeks, whereas mills or warehouses often can't supply comparative special sizes for four or five months. Thus a telephoned order from California for two pounds of metal isn't startling. A typical order from the company's books reads this way: 10 pounds, 302 stainless, full hardened, 0.0095-inch thick, plus-minus 0.0002-inch by 2¼ inches wide, for Westinghouse Electric Corp., Sharon, Pa.

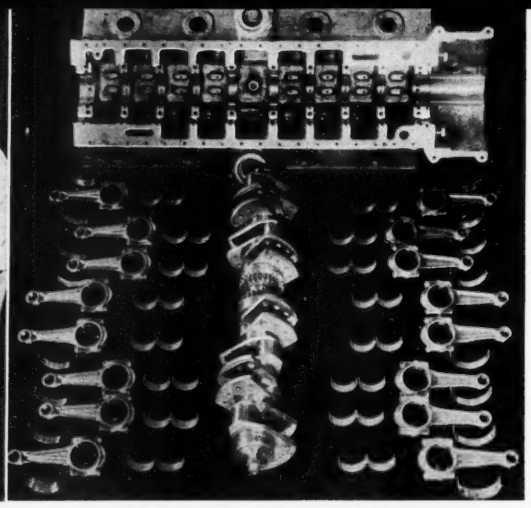
Heavy volume of shipments today are for precision instruments, electronic bursting disks and magnetic cores. Ultra-thin gage cores for high frequency magnetic amplifiers or magnetic components in computer applications are a booming application. The thin metals allow reversing magnetization with rapidity required, retaining important magnetic properties of low coercive force and high permeability.

Altered Techniques — Some customers find they can save money by changing their manufacturing methods to take advantage of these products. One fabricator that machined components to 0.001-inch by precision grinding now produces the same parts to commercial tolerances and makes up the difference with microshims in increments of 0.002-inch with a tolerance of ±0.0001-inch.

American Silver, naturally quite pleased with its new custom rolling business, won't have to pull in its horns like so many jewelry shop suppliers. It even has a certificate of necessity to expand its plant twofold.

Some examples of material made from beryllium copper stock rolled to tight tolerances. Shown at left is a bellows diaphragm; right, contact springs

Semicommercial electrolytic refining plant for indium. Metal of better than 99.95 per cent purity is produced



Crankcase, crankshaft, connecting rods and bearings of 16-cylinder engine used in the British racing motor

MORE INDIUM METAL...CAN YOU USE IT?

Material has a number of current uses and potential future applications—New recovery method augments supply

INDIUM METAL is used in applications that are highly specialized but important to many branches of industry. The silvery-white metal, with a color resembling platinum, finds its principal use in alloys with lead, tin, cadmium and bismuth for bearings, solders, and glass wetting materials.

More indium will be available. This is the general tone of a report presented to electrochemists attending a recent meeting of the Electrochemical Society in Montreal by J. R. Mills, Consolidated Mining & Smelting Co. of Canada, Trail, B. C. Increased availability may be the stimulant needed for more widespread use of the metal.

In the summer of 1946, a new and rich accumulation of indium was found to exist in a complex by-product at Consolidated's Trail smelter. This particular by-product was the major outlet of the indium which found its way into their co-ordinated zinc-lead smelter operation.

Immediately, it became evident that the treatment of this material would yield a sustained production of a considerable quantity of indium, with a reserve available from a stockpile of the indium-rich by-product accumulated in past years.

Getting It Out — Methods of treating this by-product material have been worked out. They include electrothermic and electrolytic steps leading up to a final electrolytic refining to give indium metal of better than 99.95 per cent purity.

With the stockpile material containing a large reserve supply of indium, and the regular supply of about one million ounces of new indium entering the plants annually, Consolidated is in position to supply potential users with more indium.

There is no shortage of indium in the U. S. Here, the present annual consumption is estimated to be only about one-tenth of the estimated potential production of 500,000 ounces annually.

Tin-Like—The chemical properties of indium are similar in some respects to aluminum. In a general way indium resembles tin both chemically and physically more than any other metal. This is demonstrated by the close association of these two elements in metallurgical processes.

Outstanding properties of the metal are its softness and low melting point. It is the softest metal that is stable in air. Also, it is resistant to alkali corrosion and adheres to smooth surfaces. These properties define the fields in which most of the present uses are found.

Alloys Top the List—Present-day uses for indium are based on its alloys, generally with the closely related metals, lead, tin, cadmium and bismuth. Indium alloys are not used where strength and high melting point are essential. However, these properties should be sufficiently high to meet the requirements of the applications in mind.

Indium-lead alloys have higher melting points than any of the others. Thus, in solders they have an advantage within a useful temperature range. Also, indium-lead alloys are the hardest and strongest over most of the range of alloy content.

Bismuth is the most effective

hardener for indium, followed by cadmium and then lead. Tin has the least strengthening and hardening effects. On the other hand, indium is most effective in hardening tin. Although less effective in hardening lead, since the solubility of indium in lead is so much greater, the maximum strength and hardness that can be attained in the lead-indium system is greater.

Resists Alkalis—Ternary indium-lead-tin solders have improved resistance to alkali. An alloy containing 47.5 per cent lead, 37.5 tin and 25 indium is a major improvement over the standard 50 lead 50 tin alloy in alkali corrosion resistance.

Indium additions of 1 and 2 per cent to a lead-base, 3 per cent silver soft solder increase strength markedly. However, indium does not improve the strength of lead-tin solders.

Better Bearings—Chief application of indium has been in aircraft sleeve bearings. In the Pratt & Whitney bearing, indium is plated and diffused on a steel-backed bearing, which has been previously plated with a layer of silver and then lead.

After a diffusion treatment for about 500 hours at 300°F, the concentration of indium at the surface is about 16 per cent indium, which corresponds to a solid alloy solution of indium in lead. This improves strength and hardness of the surface; however, these properties, although desirable, do not account entirely for the high standard of performance obtained with such bearings. Use of indium results in a marked improvement in corrosion resistance against organic acids in lubricating oils.

Indium diffused into a steel-backed cadmium alloy bearing improves corrosion resistance without impairing fatigue resistance.

The British racing motor, with 16 cylinders, turns at the high speed of 12,000 rpm. This engine uses indium in its bearings. These bearings consist of a mild steel backing strip, and a copper-lead alloy coating to withstand the stresses as it has a very high fatigue resistance. A diffused indium coating provides a low coefficient of friction, a good resistance to corrosion and a first-class anti-seizure property.

Although a less costly lead-tin overlay is being used instead of lead-indium for some aircraft engine bearings, the anti-seizure property obtained with indium is apparently sufficiently outstanding that indium continues to be used in many of the finest engines.

USES OF INDIUM

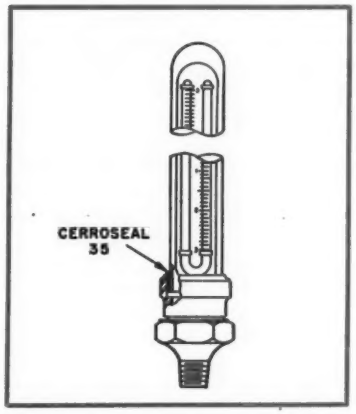
Sleeve bearings	Contacts
Low-melting alloys	Fuses
Glass-metal seals	Semi-conductors
Solders	Nuclear energy
Magnetic alloys	Coatings

Low Melting Alloys—A number of low-melting point alloys have been prepared containing indium. Addition of indium to Wood's metal alloys lowers their melting point by about 1.45°C for every 1 per cent of indium, with the lowest melting point at 47°C (117°F) for 19.1 per cent indium. These alloys are used for surgical casts, foundry patterns, fusible safety-plugs or links and in other applications where a low melting point alloy is required.

A 24 per cent indium, 76 per cent gallium alloy melts at 16°C (61°F) and is liquid at room temperature.

Seals Metal to Glass—An alloy containing equal amounts of tin and indium is used in glass sealing applications. This alloy is capable of wetting glass and of making glass-to-glass or glass-to-metal seals.

The alloy is first applied to the preheated glass by swabbing. Joints and seals may then be made in the conventional manner.



Pressure gage uses tin-indium alloy, Cerroseal 35, for glass-to-metal seal

It takes only a small concentration of indium to promote wetting of glass. Bismuth-indium, cadmium-indium, and indium-lead alloys which contain 5 per cent or more indium can be applied to glass and used for making joints. More indium is required in tin alloys, however. Lead containing as little as 0.5 per cent indium will wet glass.

Although recent work indicated that the high-lead, low-indium alloys might be an improvement in the glass sealing field, it has subsequently been shown that the tin-indium system produces vacuum tight joints with greater consistency. Indium-lead alloys, with their higher melting point, may have certain advantages in producing glass-to-metal seals in application where temperature is a critical factor. Resistance to cyclic thermal stresses set up by alternate heating and cooling between minus 60°F and about 200°F is good for both types of seals.

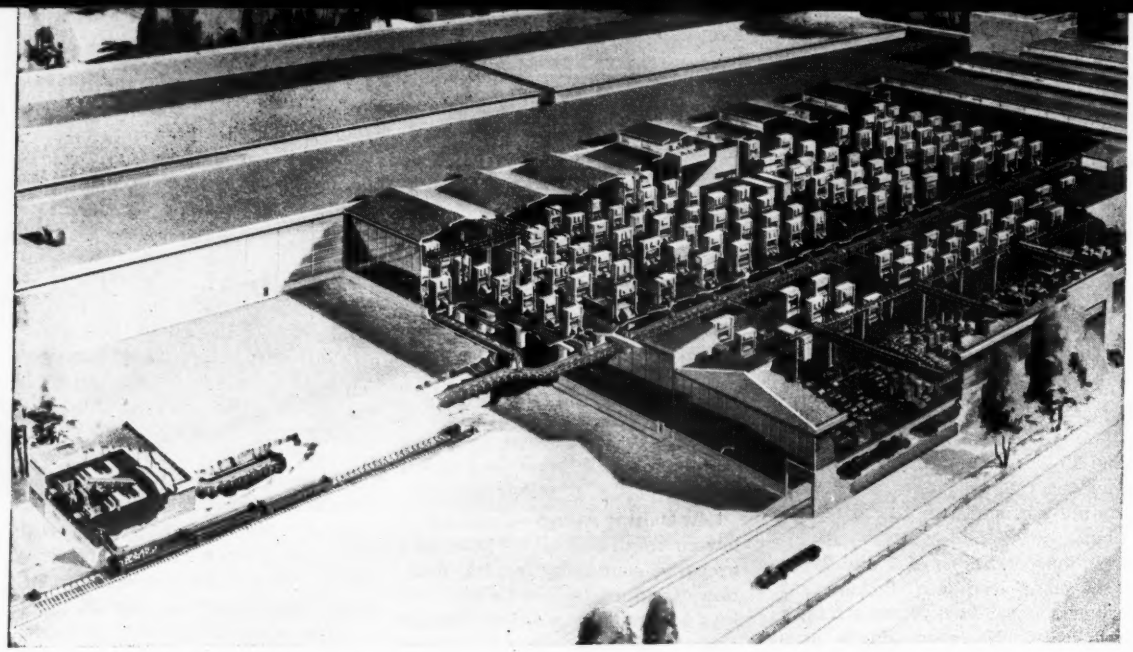
Magnetic Use—Preliminary investigation has indicated that the use of indium in ferromagnetic Heusler alloys may prove to be a promising field.

Electronics — Indium metal makes excellent low resistancee contact with such oxides as titanium dioxide and barium titanate, and therefore may find use in piezoelectric units. Indium is said to be suitable for use as a counter-electrode in selenium rectifiers.

Although apparently unsuitable for contacts in telephone circuits, indium seems to have possibilities as a filler in graphite brushes for electric motors. Use of indium as a capacitor electrode appears to warrant investigation.

Lubricants—Addition of indium to lubricants as soluble compounds or as a fine suspension appears to be a promising field for further development because of desirable properties of the metal such as its softness and plasticity, ability to bond steel surfaces without diffusion or reaction, and also the ability of the indium to maintain lubricants in a noncorrosive condition paint.

Atomic Energy Too—Artificial radioactivity is easily induced in indium by neutrons of low energy. For this reason it is used as an indicator in atomic piles.



Overall view of complete scrap baling system showing how scrap is collected from numerous presses, fed to main conveyor, baled, loaded on freight cars

Conveyor Network Moves Press Scrap

Continuous steel belt 1145 feet long forms backbone of the system taking the material from feeder network and dumping bales into freight cars outside plant

By H. C. TUTTLE
Detroit Editor

A MODERN-DAY Hercules, assigned to clean out the Augean stable of manufacturing, is using a system unmatched by anything in the world of scrap handling.

The man in the baler house at Fisher Body's Grand Rapids plant No. 1 controls a scrap conveyor line which originates more than a fifth of a mile away. He is the master of an intricate network of feeder lines which carries the offal away from the presses of this huge automotive stamping facility, mashes it into bales and drops it into freight cars.

Gobbles It Up—Capable of removing a half million pounds of scrap a day, the system was conceived and designed by the Central Works Engineering Section of the Fisher Body Division, General Motors. The conveyor was built by May-Fran Engineering Inc., Cleveland, and installed by Commercial Contracting Corp., Detroit.

Backbone of the system is the main scrap conveyor, 1145 feet long and 4½ feet wide. Fabricated from standard 9-inch May-Fran links with the outside links having 6-inch high vertical wings, this continuous steel belting threads its way underground from the front of the plant through the rear, and up a steep incline to the second floor of the baler house.

All Sizes — Twenty collecting conveyors, ranging in length from 61½ to 165 feet, tunnel under the rows of presses at right angles to the main line. Construction of these is identical with the central unit but on a smaller scale. Standard 6-inch May-Fran links make up the 24-inch wide belting, the outside having 3-inch high wings to form the scrap channel.

Fed scrap by a chute from each of the presses above, these conveyors move the material along at speeds ranging from 15 to 45 feet per minute and spill it out onto the main conveyor through short chutes. The main conveyor travels up to that maximum speed. The feeder lines have a normal carrying capacity of 30 pounds per lineal foot; that of the main stem is 40 pounds per lineal foot.

Main belt derives its power from two 10-hp motors geared by a Reliance variable speed drive with an 8 to 1 stepless range. The collecting conveyors, powered by 3 or 5-hp motors depending on length, have Reeves vari-speed pulleys of 3 to 1 ratio.

Total belt footage of the main conveyor is 2308½ feet. The collector conveyors have an aggregate belt length of 4769 feet.

Built-in Flexibility—May-Fran's unique hinged belt makes possible the transport of the wide assortment of scrap sizes which are generated by Fisher's dies. Generally, the dies are designed to shear the scrap into pieces 18 inches or shorter, and the sheets are blanked so carefully that few pieces of scrap are more than an inch or so in width. The individual links are

hinged by a solid bar running the width of the belt which holds each link in close contact with the others. The side wings are overlapped so that even when the belt runs over the end pulleys the scrap will remain in the channel.

Weight of the belt and its load is borne by an angle-iron framework attached to the floor, the top half of the belt rolling on small wheels on this frame. Lubrication for the main conveyor is directed to the underside of the belt at one point by a continuously operating Alemite Oil-Mist system.

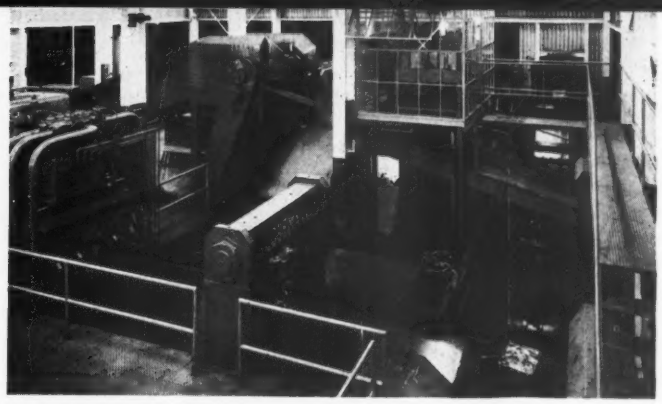
Automatic Cut-out — The main system is engineered to have a certain amount of slack in the returning portion of the belt. Anything which causes that slack to disappear requires attention, so a switch has been placed in the system to shut off power when the belt tightens to a predetermined point.

To get the scrap up the steep incline to the baler house, angle-iron cleats have been attached at regular intervals to the belt links.

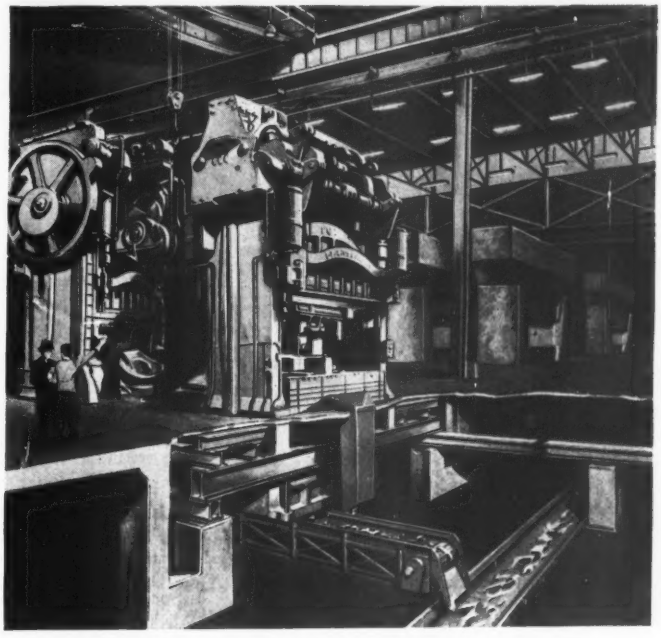
Once in the baler house, the scrap drops off the discharge end of the main conveyor into a tilting hopper, centered between two baler pits. Only one Logemann baler has been installed as yet, but plans call for two to handle the plant's peak scrap output.

At the operator's discretion he can pour the contents of the hopper into either one of these balers, the conveyor momentarily stopping until the hopper comes back into receiving position.

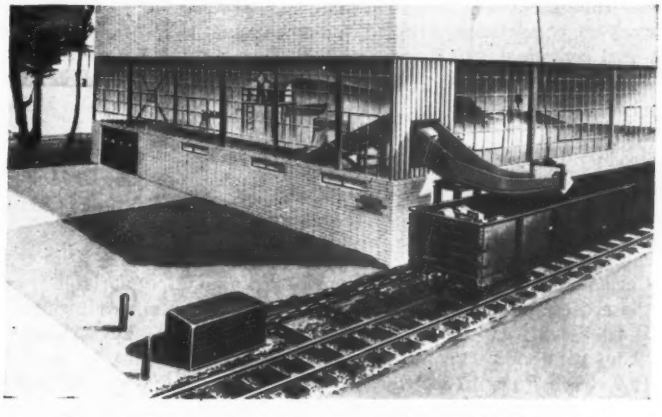
The baler, capable of exerting 2500 pounds pressure, compacts the loose scrape into a bundle averaging 24 x 16 x 16 inches and weighing between 600 and 800 pounds. This is ejected onto skids where it is pushed by box-like steel sections which are attached to two May-Fran side chains, driven by a 7½-hp motor. This conveyor, 53 feet long and 4½ feet wide, discharges outside the baler house into a gravity chute which drops the bundles into railroad gondola cars. To remove loaded cars and bring up empties, a May-Fran car-pulling conveyor capable of moving 300 tons at 6 feet per minute has been installed outside the building. The operator, from his pulpit inside, can position the cars for even loading.



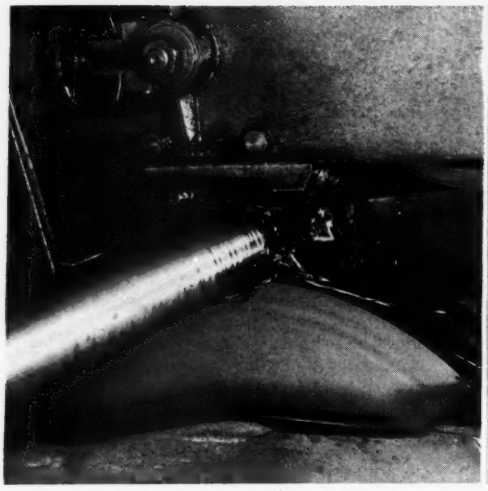
Control booth in the baler house is the heart of the scrap collecting system at Fisher Body's Grand Rapids plant. The operator discharges the completed bale



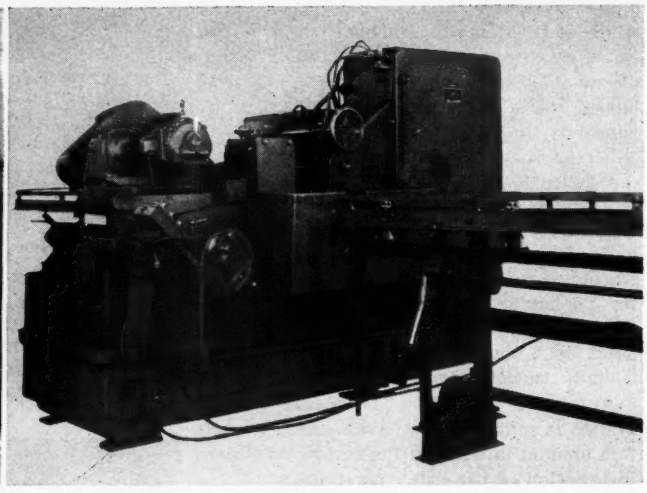
Cutaway view shows manner of discharging loose scrap from collecting conveyor onto main loose scrap conveyor



Scrap bales are loaded automatically into freight cars. Reversible car puller and conveyor unit is in foreground



Extruded tubing set in machine against metal contact wheel that doubles as drive pulley. Belt is waterproof



Overall view of machine used for grinding stainless steel and high alloy tubing prior to shipment to the B&W plant

Centerless Belt Grinds Extruded Stock

Method holds promise for fast grinding and rough finishing of bar and tube stock. Finishes down to 16 micro-inches are obtained with fine grit belts

A POUND OF METAL a minute can be ground off stainless steel and high alloy tubing by a new process called centerless belt grinding. Developed to combat finish and taper problems encountered in Ugine-Sejournet extrusion (STEEL, June 2, p. 92), the process—using an abrasive belt rather than a wheel — holds promise for fast grinding and rough finishing of bar and tube stock and for punch cut work in competition with conventional centerless grinding.

First machine for this work is now undergoing tests at the Greenfield, Mass., plant of the builder, Production Machine Co., prior to shipment to Babcock & Wilcox Co.'s Tubular Products Division, Beaver Falls, Pa. Machine was developed in co-operation with Behr-Manning Corp., Troy, N. Y., who worked out the coated abrasive belt technique. B & W will put the unit to work about year-end removing taper (up to 0.020-inch per 15-foot length) in extruded tube and grinding off die marks and traces of the molten glass stocking that is used as lubricant in the extrusion process.

Fast Finish—Cylindrical stock in sizes from 1 to 6 inches can be accommodated, and finishes down to 16 micro-inches are obtained with fine grit belts. Stock removal rate holds for all sizes of stock by adjusting feed through machine grinding belt speed and stock rotation. Tolerances can be held to plus-minus 0.001-inch.

Holding the fast-moving belt against the work under heavy pressure is a 375-pound steel contact wheel (20-inch diameter by 9 inches wide) that doubles as drive pulley. V-belt driven by 25-hp motor, machine has been operated to date at speeds of 3500 to 8500 sfm, says Raymond Coles, Production Machine's chief engineer.

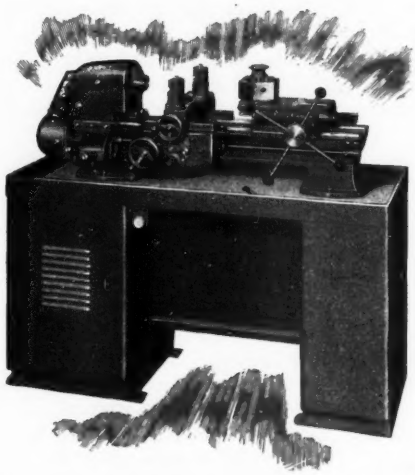
Belt-Regulated—Workpiece feed rate infinitely variable from 0 to 30 fpm is attained through variable speed drive and regulator belt assembly adjustable for work feed angle of from 0 to 15 degrees. Used instead of the conventional rubber-bonded regulator wheel, this assembly features a waterproof cloth feed belt coated with 220 grit aluminum oxide. Measuring 9¾ inches wide by 58 inches long, belt is backed by a rigid flat steel platen to provide uniform pressure across belt face and maintain dimensional accuracy.

Grinding belt is coated with 50 grit aluminum oxide and measures 9 inches wide and 168 inches long. Cutting oil—Stuart's 99—is fed to belt through recirculating system and manifold nozzle to lubricate belt and remove chips. Extra width on infeed side of regulator belt starts workpiece rotating before it contacts grinding belt. Work rest is offset toward grinding belt side to maintain and control pressure between workpiece and regulator belt. Work feed angle can be changed at any time.

Maximum belt use hasn't been determined yet, but Production Machine has gotten as much as 40 pounds of metal to a belt in test operations thus far. The company believes automatic feeds and other refinements will broaden the process' and the machine's applications.

"Darling, Dad says our elopement is almost as economical as his

Logan LATHES!"



No. 935—2
QUICK CHANGE GEAR TURRET LATHE
11" Swing, 1" Collet Capacity,
1⅜" Spindle Hole, 43½" Bed

NO OTHER LATHE of comparable specifications can match the Logan in economy. Low power cost is only one reason why industry likes the Logan. It is easily set up for every type of lathe operation. Its ball bearing spindle needs no adjustment for any speed from 45 to 1500 rpm, a feature that saves maintenance costs and prolongs spindle accuracy. Vital wear points throughout the lathe are protected by self-lubricating bronze bearings. The lasting accuracy that results from rugged, accurate overall construction keeps production at peak efficiency and holds costs down. With its 11" swing and 1" collet capacity the economical Logan can hold the costs as well as the tolerances on much of your lathe work.

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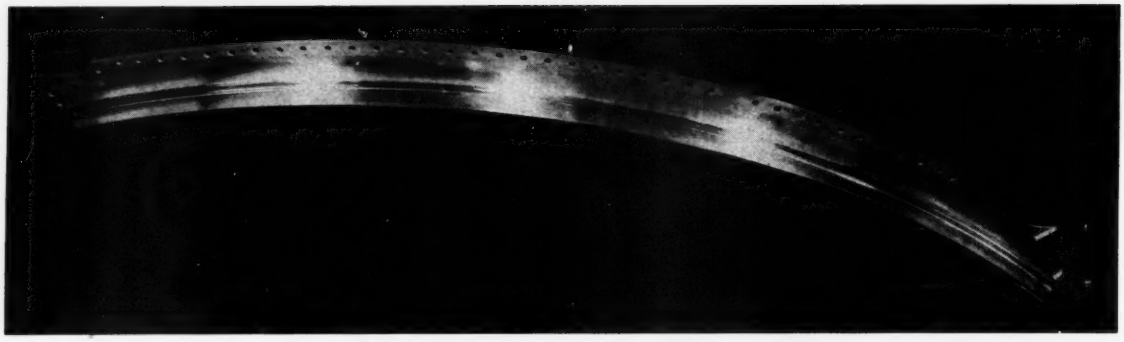

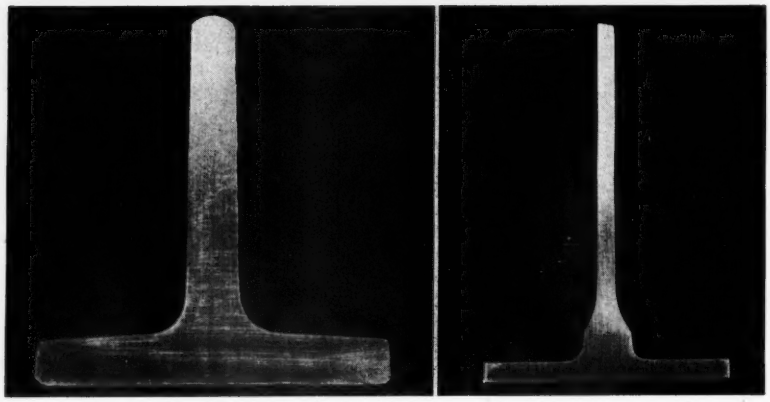

Hot-rolled chrome-moly T-stock is machined to finished dimensions and hot formed to a radius of 42 inches. Drilling, reaming, electroplating, etc., complete flap track

Rolled T-Sections Cut Aircraft Part Costs

Landing flap supports formerly cut from chrome-moly steel bars now made stronger from T-stock. New method saves time and scrap costs

By THOMAS A. DICKINSON

BY SEEKING and finding a better type of steel stock, engineers at J. C. Peacock Co., Los Angeles, were recently able to produce a batch of aircraft parts with improved physical properties at a cost which was 75 per cent below original estimates.

The parts in this case are flap tracks for Consolidated Vultee aircraft. Each is a contoured strip of steel with a length of 55 inches. The accompanying photo shows the T-shaped cross-section of one of these tracks, purpose of which is to support the airfoil that is moved in and out of the wing of a large airplane to increase lift or drag during takeoff or landing.

T-Cuts Wasteful—Original plans for producing Convair flap tracks called for the cutting of a T-section from a solid bar of chrome-moly steel. Then the T was roll-formed to a 42-inch radius, milled to finish dimensions (with tolerances ranging from plus 0.015-inch to minus 0.000-inch), drilled, reamed, electroplated, etc.

Among other things, this made it necessary to convert more than half of the material in each bar, worth about 20 cents per pound, into scrap, worth only 6 cents per pound.

Buy T-Sections?—Peacock officials decided to investigate the possibility of buying prefabricated T-sections which would eliminate the initial cutting operation and the resultant production of scrap. This was a difficult task because good grades of steel were fairly scarce, and because the flap tracks had to meet exacting quality specifications.

The investigation disclosed that Columbia Steel Co. could provide substantial quantities of hot-rolled 4140 steel T-sections with 3 x 3 x ⅜-inch by 24 feet dimensions for the same price that had been previously been paid for forged chrome-moly bars.

Save Time and Scrap—A sample of the 4140 material was obtained and fabricated as a flap track in four hours less time than was previously required, after which 60 per cent fewer scraps remained to be salvaged.

Before the later use of hot-rolled T-sections could be approved, Convair engineers at San Diego had to subject the sample track to every possible physical test; and the sample was found to exceed all the previous exacting quality specifications.

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Winning Combination

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†A PATENTED PROCESS RE 22465

FOR YOU This one-ton heat exchanger consists of Wolverine copper Trufin* (nine-fins-to-the-inch)—the integral finned tube—coiled up in an extremely small radius forming a compact mass inside a copper shell. The ends of the shell are reduced by the special Wolverine Spun End Process† to a small diameter to receive tube connection.

This is one of many combinations of Trufin and Spun End Process that can be fabricated to your specifications.

Trufin, you know, is the tube with the fins that are extruded from the tube wall. Trufin's unique *integral* construction will withstand vibration and extreme temperature changes.

The Wolverine Spun End Process is a method of forming ends of tube into special shapes, fast and economically.

We'll gladly send you our new brochure, Spun End Process, upon request on your stationery.

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Pouring steel into the big end up molds at Timken's Steel & Tube Division proves fume-free characteristic of Syncoat. Long mold life is reported

Ingot Mold Wash Ends Coating Fumes

Syncoat has good qualities of tar and pitch without the heavy fumes normally present during coating and pouring. Tests prove it commercially acceptable

By G. P. MICHALOS & D. J. GIRARDI
Steel & Tube Division
Timken Roller Bearing Co.
Canton, O.

BY-PRODUCT tar as a mold coating has been satisfactorily used in the steel industry for many years, but always with one persistent objection—the heavy fumes given off during coating and pouring. This objection has attracted a good deal of attention lately, and finally something has been done to remove it.

Engineers at the Steel & Tube Division, Timken Roller Bearing Co., have developed a mold wash, called Syncoat, that closely approaches tar in its properties of improving ingot surface and mold life. At the same time, none of the unpleasant fumes are evolved in the process.

Start from Scratch—Development of a new mold wash was complicated by the fact that very little information of definite nature exists regarding the properties a material should have if it is to be a successful mold wash. This is evident from the number of materials of widely different properties that have been tried—milk of lime, salt water, suspension of aluminum powder, sugar, etc. Even the generally accepted washes, tar and pitch, are not thoroughly understood as to the reasons why they are acceptable.

Some of the points on which steel men generally agree are: First, mold wash should contain some volatiles which evolve neutral or reducing gases during pouring. These gases repel splashes, displace air from the mold, and

TABLE I
PROXIMATE ANALYSIS OF VARIOUS MATERIALS

Material	Per Cent Volatile	Per Cent Fixed Carbon	Per Cent Ash
Tar	60.7	39.0	0.2
Pitch	39.4	60.2	0.4
A*	8.4	74.4	17.2
B*	39.2	52.7	8.1
Graphite 296	0.7	98.5	0.8
Masonoid	84.8	14.2	1.0
Syncoat	36.4	62.8	0.8

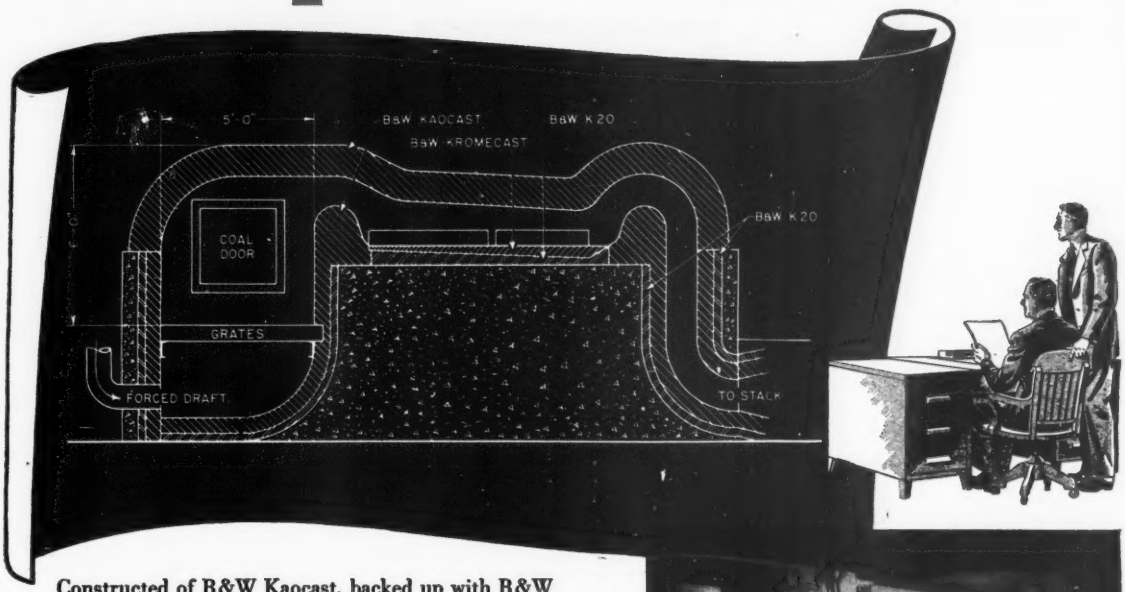
* Commercial mold wash

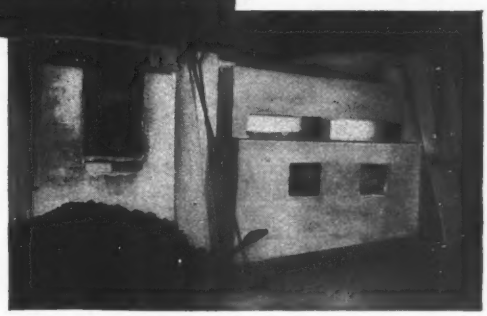
TABLE II
COMPOSITION OF SYNCOAT MOLD WASH

Water	4 parts by weight
Graphite Type 296	1.4 parts by weight
Masonoid	1.0 parts by weight
Pitch	0.6 parts by weight
Antifoam	Approximately 0.006 per cent by weight
Wetting Agent	Approximately 0.006 per cent by weight

Catawissa Valve & Fittings Company

BUILDS COMPLETE FURNACE *with B&W Refractory Concretes*





Constructed of B&W Kaocast, backed up with B&W K-20 Insulating Concrete-Mix, and with a hearth of B&W Kromecast, this forge furnace had to stand up under these tough "stop-and-go" conditions:

- **Operated only 8 hours a day**
- **Shut down over week-ends**
- **Coal-fired forced draft with a pressure of 14 ounces**
- **2650 F and higher temperatures**

Heating 125 lbs of steel per square foot of hearth area per hour to a temperature of 2300 F, Catawissa found the furnace took this punishing service so well that they built another one to the same specifications.

Quality control was also improved due to the elimination of inclusions in the forged steel products.

There are good reasons for the excellent performance of these B&W Refractory Concretes. Kaocast, a 3000 degree refractory castable, has high resistance to spalling and slag attack. It offers low volume change and negligible reheat shrinkage. Versatile Kaocast can be molded quickly, easily cast directly in place or applied with a cement gun.

B&W Kromecast provides the necessary resistance to abrasion, to the effects of molten metal, and to slag attack which are so necessary for a forge furnace hearth. The insulating properties of B&W K-20 Insulating Concrete-Mix protect the exterior ordinary concrete lining and hold temperatures down to such an extent that the outside of the furnace can be touched with a bare hand.

These are some of the reasons why B&W Refractory Concretes are being used in so many thousands of applications. Whether you need a whole furnace lining or small special shapes, it pays to investigate B&W Refractory Concretes.

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R-439

AMERICAN CHEMICAL PAINT COMPANY
AMBLER CHEMICALS ACP PROCESSES PENNA.

Technical Service Data Sheet
Subject: PROTECTING ALUMINUM WITH ALODINE®

"ALODINE" No. 100

"Alodine" No. 100 forms an amorphous phosphate surface on aluminum which is thin, tough, durable, non-metallic, continuous with and a part of the basis metal. The "Alodine" film anchors paint, prolongs paint life, and protects aluminum exposed unpainted to the atmosphere.

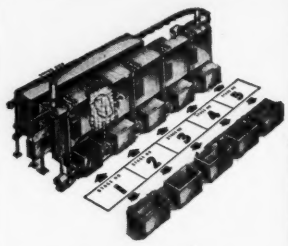
With the "Alodine" No. 100 bath at its normal temperature of 120° F., coating time by immersion approximates 1½ minutes—and by spraying, 15 to 20 seconds. Coating times and bath temperatures can be varied to suit operating conditions.

"ALODINE" No. 600

"Alodine" No. 600 forms corrosion-resistant coatings that provide excellent protection for unpainted aluminum and also make an effective paint-base. This grade is recommended for use in place of "Alodine" No. 100 on aluminum parts that are to remain unpainted or to be only partly painted; and on *all* aluminum castings and forgings whether or not these are given a paint finish.

"ALODINE" FLOW SHEETS

MULTI-STAGE POWER WASHER FOR SPRAY ALODIZING



IMMERSION TANKS FOR DIP ALODIZING

PROCESS SEQUENCE

1. Clean 2. Rinse 3. "Alodine"
4. Rinse 5. Final Rinse

NOTE: Equipment can be of mild steel throughout, except the "Alodine" stage which must be of acid-resistant material.

"Alodine" No. 600 is applied at room temperature (70° to 120° F.). Recommended coating times are 3 to 5 minutes for an immersion process and 1 to 1½ minutes for a spray process.

COATING DATA	"ALODINE" NO. 100	"ALODINE" NO. 600
COMPOSITION	Amorphous phosphate.	Amorphous mixture of metal oxides and chromates.
COLOR	Depending on alloy treated, color range is from an iridescent blue-green to a dark slate grey.	Depending on time of treatment, color range is from golden iridescent to light brown.
THICKNESS	From 0.01 to 0.08 mil. No appreciable dimensional changes occur when aluminum is Alodized.	From 0.005 to 0.01 mil. No appreciable dimensional changes occur when aluminum is Alodized.
WEIGHT	50 to 300 mgs. per square foot. Optimum: 100 to 200 mgs. per square foot.	35 to 50 mgs. per square foot.
SOLUBILITY	Insoluble in water, alcohol, solvents, etc. Insoluble in most dilute acids and alkalis. However, strong acids and alkalis which attack aluminum may penetrate the "Alodine" film and react with the underlying metal. Slightly soluble in concentrated nitric acid. Soluble in molten sodium nitrate, etc.	Insoluble in alcohol, water, solvents, etc. Soluble in strong alkalis and acids.
ELECTRICAL PROPERTIES	High dielectrical resistance.	This coating is electrically conductive. Aluminum coated with "Alodine" No. 600 can be shielded-arc welded or spot welded.
HEAT STABILITY	Unimpaired at temperatures that melt aluminum.	Unimpaired at temperatures that melt aluminum
FLEXIBILITY	Integral with and as flexible as the aluminum itself. Can withstand moderate draws.	Integral with and as flexible as the aluminum itself. Can withstand moderate draws.
ABRASION RESISTANCE	Approximately 90% of that provided by chromic acid anodized aluminum.	Approximately 90% of that provided by chromic acid anodized aluminum.
CORROSION RESISTANCE	Painted—superior to chromic acid anodizing. Unpainted—comparable with chromic acid anodizing. Meets MIL-C-5541 and other Government Finish Specifications.	Exceeds requirements of MIL-C-5541 and even AN-QQ-A-696a (anodic films)
PAINT-BONDING	Excellent. Equal to or superior to anodizing. Meets MIL-C-5541 and other Government Finish Specifications.	Excellent. Meets MIL-C-5541 and other Government Finish Specifications.
TOXICITY	Non-toxic.	Non-toxic.
BIMETALLIC CORROSION RESISTANCE	Shows good resistance against bimetallic or galvanic corrosion.	Shows good resistance against bimetallic or galvanic corrosion.

CHEMICALS ACP PROCESSES

WRITE FOR FURTHER INFORMATION ON "ALODINE" AND ON YOUR OWN ALUMINUM PROTECTION PROBLEMS.

CHEMICALS ACP PROCESSES

TABLE III
CONDITIONING DATA ON 9" x 9½" ROLLED BLOOMS PICKLED-BILLETEERED, TOP POURED-KILLED STEEL, ALL GRADES

Mold Wash	No. of Heats	T.M.H. Per Cent of Tar
Tar	200	100
A*	50	67.5
B*	272	77.7
Syncoat	120	94.5

* Commercial mold wash

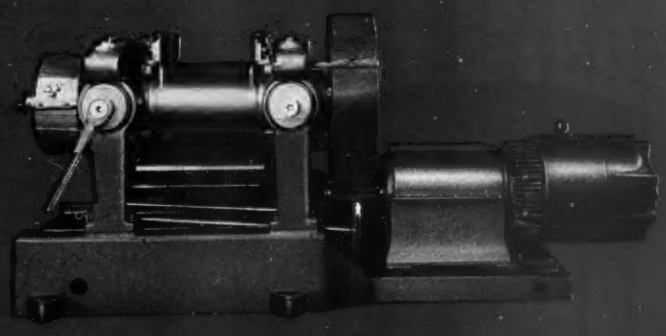
keep oxide films away from the mold surface. Volatiles, however, must be driven off in such fashion that no large amount of gas is formed below the rising molten metal level.

Film of Carbon — Secondly, a good mold wash must leave a thin layer of suitable material on the mold surface after the volatile is driven off. Pitch and tar both satisfy this requirement by leaving a thin film of carbon on the mold wall which is beneficial to ingot surface and mold life.

Finally, a mold wash should have low ash content which contributes to better ingot surface and cleaner steel. There are other considerations such as safety, health, fumes, cost, drying speed, ease of handling, etc., which figure into the commercial acceptance of a mold wash, but the three factors mentioned above are primary to the consideration.

Syncoat Mold Wash — Various materials were tested for their volatile, fixed carbon and ash contents, with the idea of discovering which materials fall in the range of values given for pitch and tar. (see Table I) Among those tested were graphite powder type 296 supplied by National Carbon Co., and Masonoid supplied by Masonite Corp. It is evident that a mechanical mixture of these two would have a wide range of volatile and fixed carbon contents, and with ash contents of approximately 1 per cent.

Pitch Added — The fineness of powdered graphite type 296 (97 per cent through a 200 mesh screen) facilitated good mechanical mixture through agitation. Addition of some pitch to the mixture further improved its uniformity. Since the graphite and Masonoid mix was initially designed to duplicate the volatile and fixed carbon contents of pitch, the



When you use a power drive which is an assembly of motors, pulleys and belts, chains and sprockets, gearing, speed reducers, etc., you waste time and money in purchasing, handling and assembling these various units into the final drive.

Master power drives designed as complete units with component parts matching size for size and rating for rating offer you considerable saving in space and money . . . especially in the larger sized units.

best for the BIG ones too

So don't put up with "make-shift" assemblies when you can select from Master's broad line, standard units which easily combine to give you the RIGHT horsepower, the RIGHT shaft speed, the RIGHT features in one compact unit that you can use RIGHT where you want it.

Use the RIGHT power drive to increase the saleability of your motor driven products . . . improve the economy, safety, and productivity of your plant equipment. That's the horsesense way to use horsepower.

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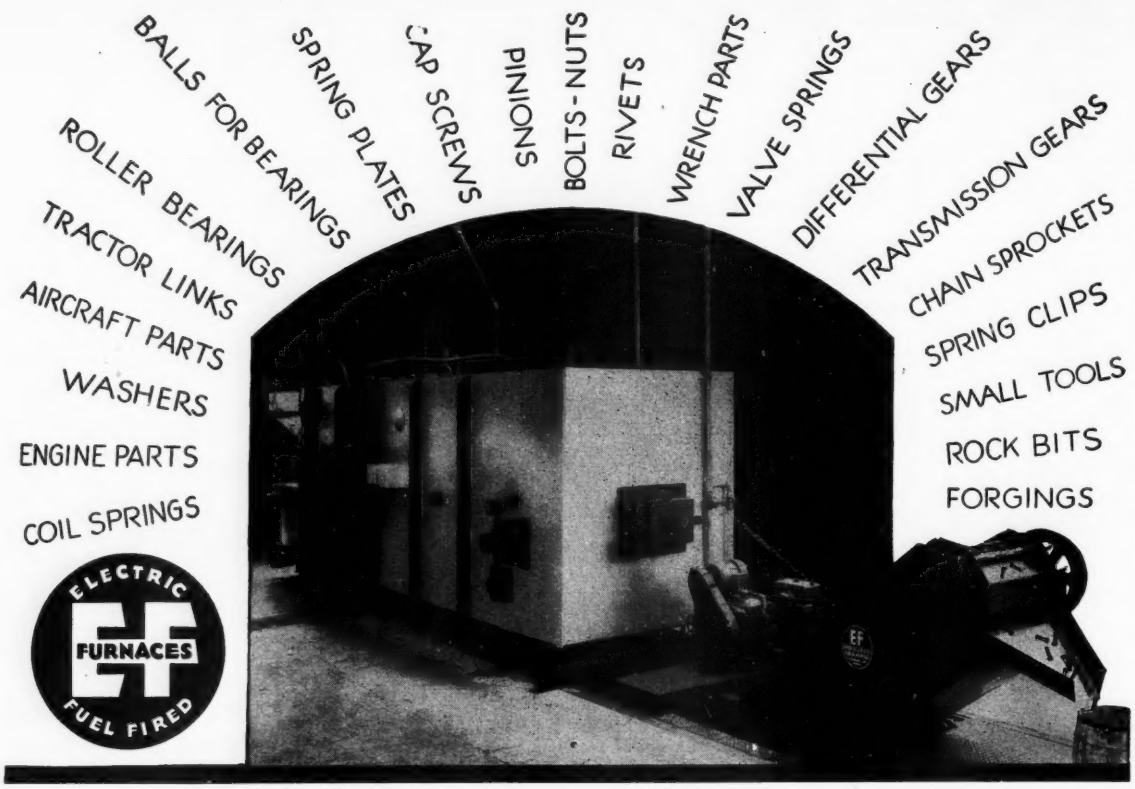
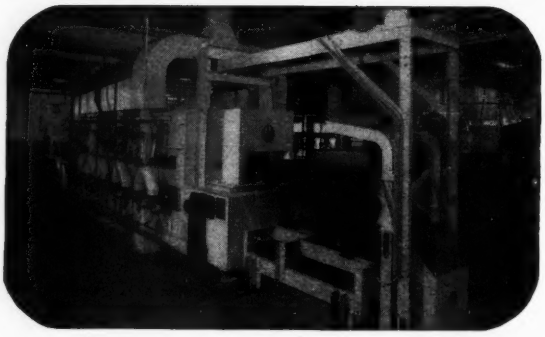
1/8 TO 125 HORSEPOWER



For Hardening Small Parts

Uniformly—Scale-free—Continuously 175 to 2000 lbs. per hour



EF Chain Belt Conveyor Furnace, Radiant Tube Gas Heated, Showing Labor-Saving Loading Arrangement. (View at Top) Electrically Heated Furnace Showing Automatic Quench and Discharge.

The EF Chain Belt Conveyor Furnace is one of the most satisfactory continuous heating units yet devised for scale-free hardening, carbon restoration and non-decarb heat treating small and medium size parts. The material is loaded onto a rugged heat resisting cast link conveyor belt; carried through the furnace; heated uniformly to proper temperature; automatically quenched and discharged. No pans or trays are needed. Hundreds in daily operation prove the dependability and efficiency of our design. 11 standard sizes. Capacities to 2000 lbs. or more per hour. Gas, oil or electrically heated. Furnished complete with any desired feeding or discharging equipment. Write for folders describing our chain belt or other production furnaces.

Gas-Fired, Oil-Fired EF and Electric Furnaces
for any Process, Product or Production

THE ELECTRIC FURNACE CO.

WILSON ST. at PENNA. R. R. *Salem - Ohio*

Canadian Associates • CANEFCO LIMITED • Toronto 1, Canada

addition of pitch does not change the characteristics desired.

With the above considerations in mind a mold wash named Syncoat and having the composition shown in Table II was arrived at.

Mixing Tips—Water suspensions of masonoid have a tendency to foam. The addition of graphite and pitch to the water prior to the addition of the Masonoid will help in reducing the foaming tendency of the mixture. Small quantities of anti-foaming agent and wetting agent help to improve mixture uniformity and reduce foaming. Constant agitation is essential as the graphite tends to settle out.

Preliminary runs on Syncoat mold wash were very encouraging, as can be seen from Table III. Syncoat heats showed considerable improvement in conditioned tons per man hour over mold washes A and B. The new wash attained a level of approximately 95 per cent of that for tar coated heats.

Problem Solved—Syncoat does not evolve the large volume of unpleasant fumes associated with pitch and tar and thereby effectively solves this major problem. Masonoid, graphite and pitch are all shipped in paper bag form so there is no handling problem.

Hand and machine sprayed coatings of Syncoat will dry in 5 to 15 minutes after application depending on the mold temperature. The coating formed is hard and will not rub off. Although the upper permissible limit of mold temperatures that can be used without affecting Syncoat mold wash have not been determined, measured mold temperatures up to 450°F did not have any noticeable detrimental effects.

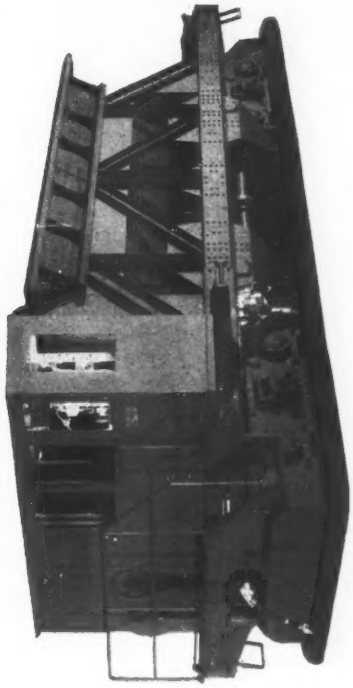
Good Mold Life—Mold life data showed about a 6 per cent decrease in mold life of Syncoat coated molds versus tar coated molds. Because of the many factors that enter into establishing mold life it is felt that this relatively small difference is not significant. Relative cost data of Syncoat versus tar coatings for hand and machine sprayed big end up closed bottom molds is approximately 2.15.

Experience at Timken over an extended period has shown that Syncoat mold wash is a solution to the mold coating problem.

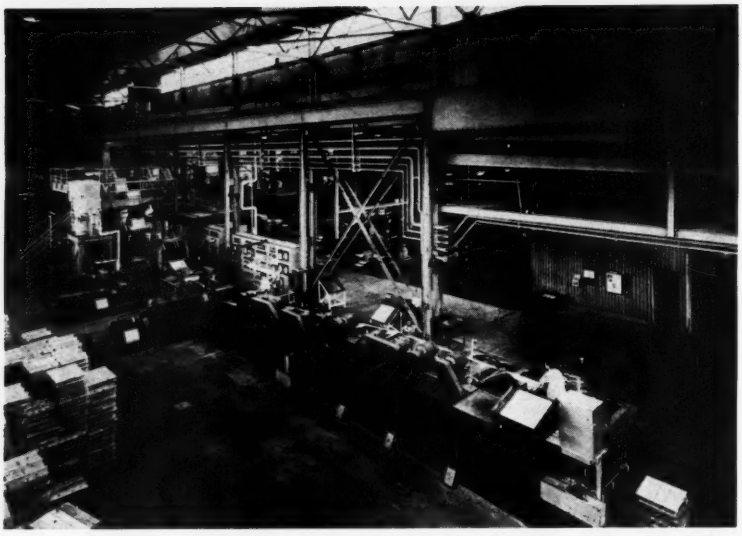
FOR THE VERY BEST
See ATLAS
TRANSFERS - SCALE CARS
COAL CHARGERS - COKE QUENCHERS
60-TON BOTTOM DUMP ORE TRANSFER CAR

This is one of the latest Atlas Transfer Car designs arranged for modern hydraulic operation. It provides close control of the discharge and eliminates freezing of air lines in the winter. A hydraulically operated pusher arm is provided of the latest horizontal telescoping type. The brakes also are hydraulically operated and apply automatically if pressure is low or if power fails.

At this plant the car must cross over to the coke track to shift coke cars. There is no conductor rail on the coke track so the car is equipped with a motor-driven cable reel attachment, enabling it to perform this switching function. When operating on the cable reel the collector shoes are cut out and automatically raised off of the conductor rails. The cab is overhung to give the operator a line of vision down the side of the car.



THE ATLAS CAR & MFG. CO.
ENGINEERS and MANUFACTURERS
1100 IVANHOE ROAD CLEVELAND 10, OHIO



VERTICAL ACID LINE RATES 1200 FPM
. . . produces more than 12 two-foot-long sheets per second

Kaiser Opens Electrolytic Tin Line

VERTICAL-ACID electrolytic tinning line, capable of tinning enough steel every second to make 50 average-size tin cans, has started operation at the Fontana, Calif., plant of Kaiser Steel Corp.

Rated at 1200 fpm, the new line will produce more than 10 two-foot-long sheets of tinned steel per second. The entire process is automatic, including uncoiling, cleaning, pickling, plating, reflowing, oiling, shearing, classifying and piling of tin-coated steel strip.

General Electric Co., working with Kaiser engineers, supplied the electrical system for the installation. The company furnished a photoelectric loop control for the strip-propelling phase and controls for the electrolytic cleaning, pickling, plating, reflowing, and chemical-treatment processes.

Regulating Panels—Two giant control panels, each over 90 feet long, are used to regulate the alternating and direct current sections of the line. High and low voltage distribution switchgear are incorporated.

Two 1500-kva transformers furnish power for the flow-brightening equipment. A 60,000-v power pack supplies the electrostatic charge for oiling the strip after it has been tinned. Other GE equipment includes motors, motor-generator sets, transformers, and instrumentation.

The new Kaiser installation employs a beta-ray gage in one of its first applications on a continuous tinning line. This noncontacting gage continuously and automatically monitors thickness of the tin plate as it passes through the line. A pinhole detector checks the strip for pinholes and other imperfections.

Improved Classifier — GE engineers introduced an improvement on the sheet classifier whereby different flights can be shut down and jogged to clear up a cobble. Flights then are reaccelerated without shutting down the line. This feature should reduce the amount of plate formerly damaged when the line had to be stopped.

Hyster Talks Turret Trucks

Catalog featuring their line of turret trucks for horizontal materials handling in every kind of industry has been published by Hyster Co., Portland Oreg. Specifications are included in the brochure which is available free of charge from the company.

Belt Weighs Continuously

DEVELOPMENT of a conveyor belt weighing system capable of electronically adding, subtracting and recording tons per hour of material delivered to one or more points is announced by Trans-Weigh Co., Wayne, Pa. Industrial Division, Minneapolis - Honeywell Regulator Co., Philadelphia, cooperated in perfecting the device.

Applicable for belt-conveyed materials such as low-grade ore, the system continuously weighs material being delivered and provides running measurements of tonnage as well as the total tonnage delivered over a period of time. Measurements can be transmitted over a considerable distance either to a foreman's office or to a central control panel board where chart records are maintained.

Integrates Total Weight—In operation, the conveyor belt rides over a set of three idlers which form a wide-based trough. The force exerted on these is measured by a strain gage. Weight of the belt itself and other parts is subtracted electrically. Final weight measurements are fed into an electronic recorder which indicates and records the instantaneous flow and integrates the total weight passing on the belt.

Among the many applications for this new system are coal feed to power plants, ore recovery measurements in smelting plants, and any other industry application involving bulk handling of materials which used to be guessed or batch-weighed.

Calculator Uses Thread Inserts

In converting side covers of their calculating machine from aluminum to magnesium castings, engineers of Marchant Calculators Inc., Oakland, Calif., reduced the weight of their design. But to accomplish this change they found it desirable to improve the characteristics of the tapped holes.

This was done by installing Heli-Coil thread inserts into the prepared thread bosses of the cast side covers. Three inserts are used in each cover, forming $\frac{5}{16}$-18 internal threads $\frac{5}{16}$-inch long.

The inserts, helical coils of diamond shaped stainless steel wire,

SQUARE FACTS stop losses

(THE EQUIVALENT OF)

3389 blanks this size

A sheet of exactly .022" strip steel the size of this page (8¼" x 11¼") weighs 9.4416 ounces. The same size sheet of .024" (.022", .002" oversize) with the square punched out weighs the same.

in every ton if the .022" strip steel you order actually measures .002" oversize

footage loss increases as thickness increases; decreases as gauge decreases.

the precision gauge tolerance of CMP THINSTEEL protects you against such costly losses, insures maximum practical yield per ton

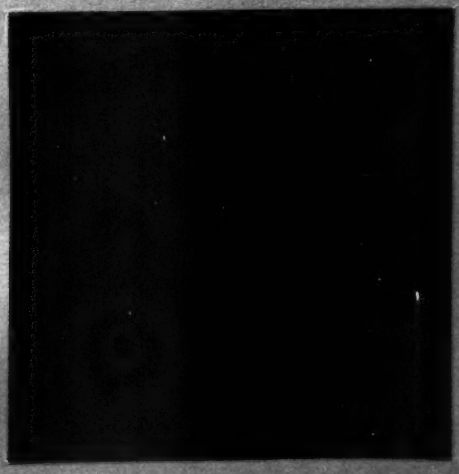
CMP the Cold Metal Products co.

YOUNGSTOWN 1, OHIO

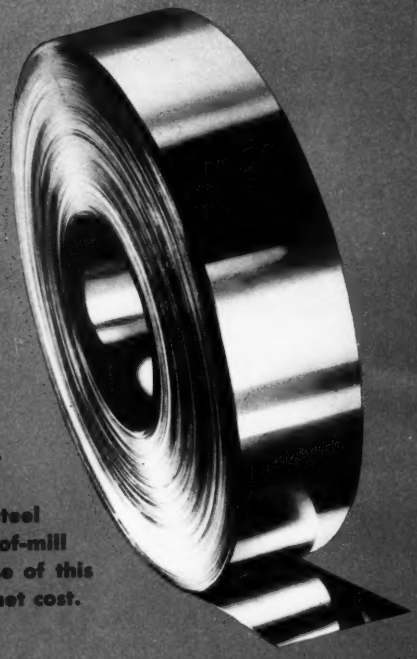
New York • Chicago • Indianapolis • Detroit • St. Louis • Los Angeles • Cleveland

See next page for list of THINSTEEL products.

If your blank size is SQUARE, round, oval, or any other shape, obtain more blanks per ton



with CMP THINSTEEL TRADE MARK



It "Pays Off" to Pay The Difference For CMP THINSTEEL Precision Cold-Rolled Strip....

Pay more for Thinsteel and cut costs; more than for run-of-mill strip or sheet, that is. Unusual, isn't it, for a steel producer to say, "Buy our steel—it costs more money." But it's not because CMP Thinsteel strip sometimes costs more than sheet coils or run-of-mill strip that it is to be recommended but because the use of this precision product can well mean a lower end product net cost.

And how is this possible? Because in addition to the greater area or larger number of square feet per ton due to the close gauge tolerances inherent in CMP strip, but also because the characteristic of uniformity extends to physical properties, finish, etc., which prolong die life and mean fewer rejects. If this is true, obviously the first steel cost is not the important consideration but rather your attention should be focused on the end product cost. We'd like to test this theory in your operations and for your end products and we think it's worth your while to investigate the accuracy of these claims for your particular processing operations. If sheet coils or run-of-mill strip meets with your full approval and gives you complete satisfaction then you don't want to buy CMP Precision Thinsteel.

LOW CARBON STEEL
ELECTRO-ZINC COATED
HIGH CARBON STEEL
TEMPERED SPRING STEEL
STAINLESS STEEL

CMP THINSTEEL products can be ordered direct from the mill, or for less than mill quantities or for emergency service needs, from following warehouses:

The Kenilworth Steel Company, 750 Boulevard, Kenilworth, New Jersey, 'phone N. Y. COrtland 7-2427 or N. J. UNionville 2-6900.

Precision Steel Warehouse, Inc., 4409-4425 West Kinzie Street, Chicago 24, Illinois, 'phone COlumbus 1-2700.

The Cold Metal Products Company of California, 6600 McKinley Avenue, Los Angeles, California, 'phone PLeasant 3-1291.

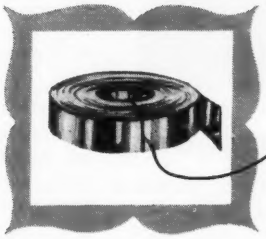
PRECISION COLD ROLLED CMP STEEL

the Cold Metal Products co.

YOUNGSTOWN 1, OHIO

New York • Chicago • Indianapolis • Detroit • St. Louis • Los Angeles • Cleveland

KEEP YOUR PRODUCTION PICTURE OUT OF THE RED...



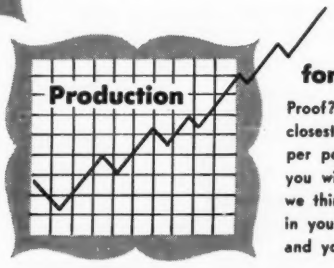
Best Picture on Cold Rolled Strip

is THINSTEEL

Why? Because the entire producing facilities and company organization are aimed at the processing and finishing of only one highly specialized product—light gauge strip steel in carbon grades, alloy, stainless, and hardened and tempered spring steel.

Best Picture, too, for consistent performance

How? The measure of in-process controls applied throughout production cycles necessarily results in adherence to specifications and insures equality of delivery from one order to the next.



And the best picture for more finished parts per ton

Proof? If you will first concede that the strip steel held closest to the specified thickness will result in more feet per pound and thus more finished parts per ton, and if you will test CMP THINSTEEL with this factor in mind, we think you will agree that the use of CMP THINSTEEL in your plant will make your production problems easier and your profit picture brighter.

CMP

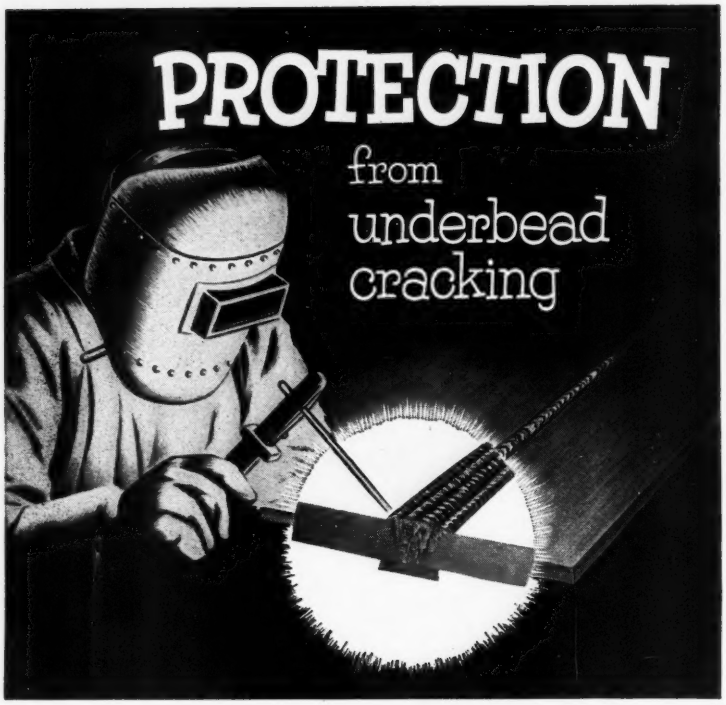
the Cold Metal Products co.

YOUNGSTOWN 1, OHIO

New York • Chicago • Indianapolis • Detroit • St. Louis • Los Angeles • Cleveland

LOW CARBON, HIGH CARBON (Annealed or Tempered) ***STAINLESS AND ALLOY GRADES, ELECTRO ZINC COATED ARE AVAILABLE FROM:***

THE COLD METAL PRODUCTS CO. of CALIFORNIA, 6600 McKinley Avenue, Los Angeles
Phone: PLeasant 3-1291
THE KENILWORTH. STEEL CO., 750 Boulevard, Kenilworth, New Jersey
Phones: N. Y., COurtlandt 7-2427; N. J., UNionville 2-6900
PRECISION STEEL WAREHOUSE, INC., 4425 W. Kinzie, Chicago • Phone: COlumbus 1-2700



Use ARCOS Low Hydrogen Electrodes

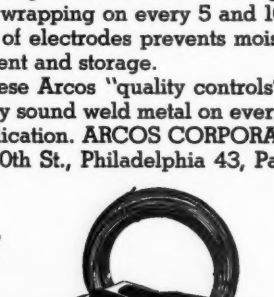
ARCOS GRADE	A.W.S. SPEC.
Tensilend 70	E7016
Tensilend 100	E10016
Tensilend 120	E12015
Manganend 1M	E9015
Manganend 2M	E10015
Nickend 2	E8015
Chromend 1M	E8015
Chromend 2M	E9015

With Arcos Low Hydrogen Electrodes you can produce sound weld metal without the need for preheat or post heat frequently required with mild steel electrodes. Correct selection and blending of coating ingredients, and controlled-cycle, high temperature baking produce a moisture-controlled coating that safely minimizes the gases released in welding.

The moisture-proof wrapping on every 5 and 10 lb. package in a box of electrodes prevents moisture pick-up in shipment and storage.

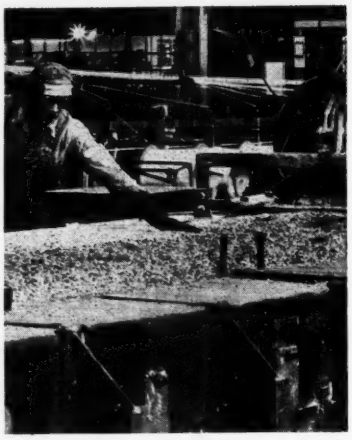
Added together, these Arcos "quality controls" assure you consistently sound weld metal on every high tensile steel application. ARCOS CORPORATION • 1500 South 50th St., Philadelphia 43, Pa.

WELD WITH



ARCOS

Specialists in Stainless, Low Hydrogen and Non-Ferrous Electrodes



Popcorn Insulation

Vermiculite insulation keeps heat from this worker's hands although molten zinc is held at 787°F only 3 inches below. In this galvanizing operation, the mica-like granular material, a product of Zonolite Co., Chicago, prevents excess heat loss. Tiny air cells in each particle act to obstruct or slow passage of heat

provide internal threads having a tensile strength up to 50 per cent greater than is possible in the magnesium alone. In case the side plates are removed for cleaning or servicing the inner parts of the machine, there is no risk of damage and wear to the threads.

Device Watches Falling Air

Pressure switch for sounding a buzzer or other signal when air pressure in a tank falls below the safety level is being produced by the Rochester Mfg. Co., Rochester. N. Y.

The switch is intended primarily to serve as a warning signal on buses and trucks having air brakes, to demand the driver's attention if the air pressure drops dangerously. A number of manufacturers already are including the switch as standard equipment on all new models. The switch can also be applied to any other compressed air system.

Principal part of the switch is a pressure-sensitive diaphragm, enclosed in a one-piece steel case drawn from 0.050 terneplate. In operation, the diaphragm, through a rocker action linkage, completes an electrical circuit whenever the air pressure in the air receiver

The Heat Wall

A WALL of intense, metal-melting heat is termed nature's second obstacle against supersonic flight.

William Imbrie, development engineer, General Electric Co., Schenectady, N. Y., says the first obstacle, the supersonic barrier, has been overcome. This wall of heat or "thermal barrier" must also be hurdled if aircraft of the future are to exceed the record of 1300 mph.

Mr. Imbrie says present ram-cooling methods are incapable of preventing aircraft metals and equipment from softening at excess speeds and high altitudes.

Refrigeration systems prevent pilots from roasting alive, but aircraft manufacturers are reluctant to install additional heavy equipment for cooling at supersonic speeds.

"We must either develop new temperature-resistant metals or find more effective methods of cooling," Mr. Imbrie maintains.

tank drops below the predetermined safety point—usually about 60 pounds. At that point a pressure difference of not more than half a pound actuates the switch. In most installations the switch activates a loud buzzer to call attention to the drop in air pressure.

Battery Applications Reported

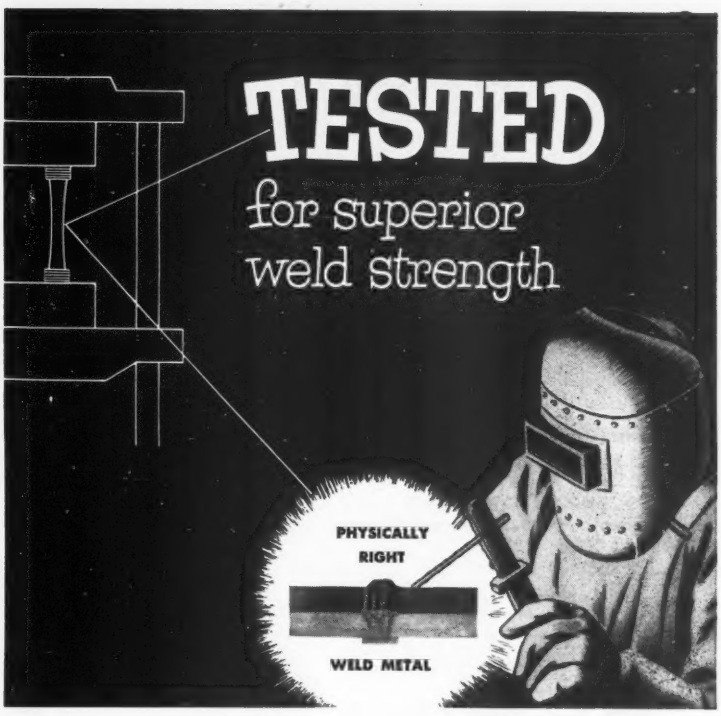
Help for industrial users in selecting and installing the proper glass-jar batteries in control, alarm, telephone, switchgear and signaling services is provided by a 20-page catalog published by Gould-National Batteries Inc., Trenton, N. J.

Called "Stationary Batteries for Auxiliary Power and Control," the free booklet covers specifications, dimensions and application information.

Ceramic Used As Tubing Media

Triangular shaped, tough white ceramic tumbling media for barrel tumbling, deburring and finishing are introduced by Crown Rheostat & Supply Co., Chicago. The company says it has longer service life than stones or aluminum oxide tumbling chips.

Available in a variety of sizes,



Use ARCOS Stainless Electrodes

Because Arcos applies a series of mechanical performance tests for strength, toughness, and ductility to all types of Stainless weld metal, you can be sure that your deposits with Arcos Stainless Electrodes will be physically "right". Whatever the job requirement—ability to withstand heavy loads, high pressures, or severe shocks—you'll get the results you want.

Other Arcos "quality controls" assure that the weld metal will be chemically and metallurgically "right" as well. That's why it will pay you to depend on Arcos Stainless Electrodes for the correct combination of properties that lead to sound welds on every job. ARCOS CORPORATION • 1500 South 50th St., Philadelphia 43, Penna.

WELD WITH ARCOS

Specialists in Stainless, Low Hydrogen and Non-Ferrous Electrodes

STANDARDS and SPECIALS by the Millions

THE FERRY CAP & SET SCREW CO.

2159 SCRANTON ROAD • • • CLEVELAND 13, OHIO

"SHINYHEADS"

America's Best Looking Cap Screw

Made of high carbon steel — AISI C-1038 — to standards for Full Finished hexagon head cap screws — bright finish. Heads machined top and bottom. Hexagon faces clean cut, smooth and true, mirror finish. Tensile strength 95,000-110,000 p.s.i. Carried in stock.

"HI-CARBS"

Heat Treated Black Satin Finish

Made of high carbon steel — AISI C-1038. Furnished with black satin finish due to double heat treatment. Hexagon heads die made, not machined. Points machine turned; flat and chamfered. Tensile strength 130,000-160,000 p.s.i. Carried in stock.

"LO-CARBS"

Made of AISI C-1018 steel — bright finish. For use where heat treatment is not required and where ordinary hexagon heads are satisfactory. Hexagon heads die made to size — not machined. Points machine turned. Tensile strength 75,000-95,000 p.s.i. Carried in stock.

SET SCREWS

Square head and headless — cup point. Case hardened. Expertly made by the pioneers in producing Cup Point Set Screws by the cold upset process. Cup points machine turned. Carried in stock.

FILLISTER CAP SCREWS

Heads completely machined top and bottom. Milled slots — less burrs. Flat and chamfered machined point. Carried in stock.

FLAT HEAD CAP SCREWS

Heads completely machined top and bottom. Milled slots — less burrs. Flat and chamfered machined point. Carried in stock.

"SHINYLAND" STUDS

All studs made steam-tight on tap end unless otherwise specified, with flat and chamfered machined point. Nut end, oval point. Land between threads shiny, bright, mirror finish. Carried in stock.

ADJUSTING SCREWS

Valve tappet adjusting screws — Hexagon head style — to blue print specifications — hexagon head hard; polished if specified — threads soft to close tolerance — points machine turned; flat and chamfered.

CONNECTING ROD BOLTS

Made of alloy steel — heat treated — threads rolled or cut — finished to extremely close thread and body tolerances — body ground where specified. Expertly made by the pioneers in producing connecting rod bolts by the cold upset process.

SPRING BOLTS

Case hardened to proper depth and ground to close tolerances. Thread end annealed. Supplied in various head shapes, with oil holes and grooves of different kinds, and flats accurately milled.

FERRY PATENTED ACORN NUTS

For ornamental purposes. Steel insert — steel covered. Finish: plain, zinc plated, cadmium plated. Size: 9/16", 3/4", 15/16" across the flats.

Tapped 1/4" to 3/4" inclusive. Cross section of Ferry patented acorn nut, showing how steel hexagon nut fits snugly into shell.

Pioneers and Recognized Specialists, Cold Upset Screw Products since 1907

STANDARDS carried by LEADING DISTRIBUTORS

* **SPECIALS** furnished to BLUE PRINT SPECIFICATIONS

WRITE FOR INFORMATION

. SEND FOR SAMPLES

the user can select the proper size to avoid lodgement hazards encountered when conventional random shaped natural or synthetic stone chips lodge in holes and slots.

Exhaust Gas Powers Propeller

First light airplane to use exhaust gases from a jet engine to power a propeller has successfully passed initial flight tests, reports Cessna Aircraft Co.

The new XL-19B is a joint development of Cessna, Boeing Airplane Co., the U. S. Army and Air Force. Its engine is the result of a joint Boeing-Navy project, the body is that of the Cessna L-19.

The engine is a new model gas turbine, but unlike a jet engine, it employs the exhaust gases from its jet power-producing section to drive a propeller shaft. Turbine will operate on diesel fuel, any grade of automotive fuel, high octane aviation gasoline and jet fuel.

Process Cuts Coating Costs

Production costs have been reduced more than 50 per cent on baked enamel and lacquer finishes of small metal parts for industry as result of a process developed at Apex Stamping Co., Newark, N. J.

The method speeds up the time of production by as much as 300 per cent in coating parts from ½-inch to 2 feet in length. The company credits this to a conveyorized system for coating that was formerly possible only by spraying method.

Paint waste, as high as 85 per cent in the spray method, has been greatly reduced. Rejects, which ran as high as 25 per cent, have been eliminated.

Caterpillar Builds in East

First steel on a new plant for Caterpillar Tractor Co., York, Pa., was recently erected. The 400,000 sq ft plant is expected to start production next year, company officials report, enabling the firm to use eastern steels and better supply replacement parts to eastern and European outlets.

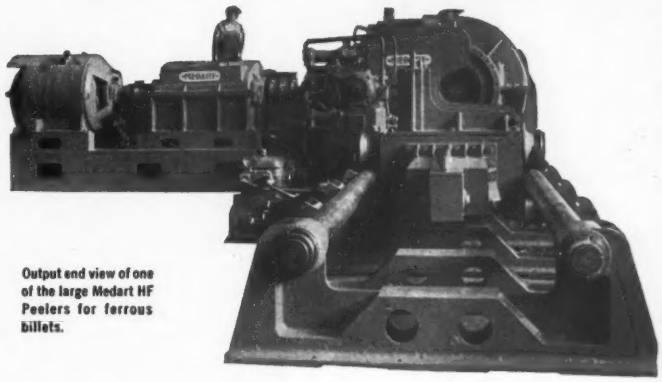
Plans call for 10 machining lines and one assembly line which will assemble complete track rollers and track chain. No prime products will be manufactured. Nature

Billets Peeled at 20', 30', even 40' Per Minute!

MEDART

MODEL HF

BILLET PEELERS



Output end view of one of the large Medart HF Peelers for ferrous billets.

The output of Medart Billet Peelers is limited only by the capacity of the best available cutting tools! That means the absolute maximum in production at the lowest possible cost!

Built to handle both ferrous billets from 1" to 14" diameter—as well as brass, copper, aluminum and other non-ferrous metals—the throughput speeds of these Medart Peelers range from 1' to 40' per minute, depending upon workpiece size and material. They can be equipped with either one or two cutterheads—arranged for high surface finish or heaviest hogging cuts—and furnished with hydraulic or pneumatic controls, with push-pull feed devices, and for completely automatic operation.

No other scalping or turning machines made can match the production speed or economy of Medart's complete line of Billet Peelers.

Write NOW For Catalog!

THE MEDART COMPANY 3535 DE KALB STREET, ST. LOUIS 18, MISSOURI

of the operation will require an unusually high percentage of expensive heat treating equipment such as furnaces, induction hardening equipment and generators.

ASA Coal Mine Code Changed

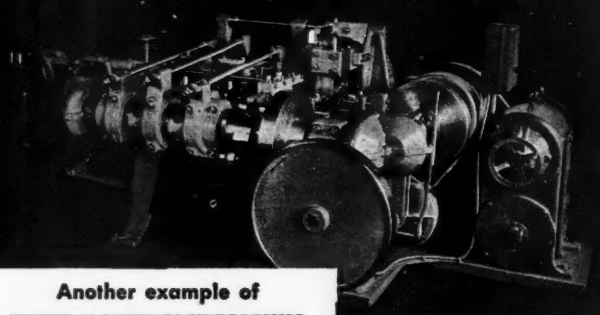
Safety code of American Standard Association regarding installation of electrical equipment in and around coal mines has been revised and is available through the Bureau of Mines, U. S. Department of the Interior.

Last revised in 1926, the new code is sponsored by American Mining Congress and the Bureau of Mines. It reflects the many changes that have taken place in the mining industry in the last quarter century.

Chart Has Slingful of Data

A wall chart combining crane signals and suggestions for proper use of slings as well as strength and safe-load tables of slings ranging from 800 pounds to 243.4 tons, has been released by Macwhyte Co., Kenosha, Wis. It may be obtained by asking for chart 5273.

PRODUCTION RECORDS *Broken* with NILSON 4-SLIDE *Machine!*



Another example of
FASTER, LOWER COST FORMING
of Ribbon Metal Stock

★ *180 Terminal Contacts* Per Minute

★ *7 Separate Operations* Eliminated

A famous national manufacturer tripled production of the Terminal Contact illustrated above (in actual size) and reduced production costs proportionately by replacing several progress die set-ups with one Nilson 5-3-F four side machine. *Seven separate operations were eliminated;* 180 completed contacts produced per minute. Time required for tooling changes was reduced 50% over similar type machines.

This example clearly shows the big savings you can make in overhead, maintenance, labor and time with a Nilson 4-slide!

Taking stock directly from the coil, NILSON metal ribbon stock four-slide machines automatically feed, straighten, pierce, blank, swage, stamp, coin, cut off and perform up to five forming operations with speed and accuracy. Built in five models with capacities up to 2½" wide and feed lengths up to 15". For specific recommendations on your wire and ribbon metal forming problems, send details, prints or samples of your operation to us when you request the bulletin.

THERE'S STRONG LIFE A NILSON

Specialists in Wire Forming Equipment for Over 50 Years

THE A. H. NILSON MACHINE COMPANY

1512-D RAILROAD AVENUE, BRIDGEPORT 5, CONNECTICUT

OTHER NILSON PRODUCTS:

- Automatic chain-making machines
- Automatic staple forming machines
- Wire and Stock reels
- Foot Presses
- Wire straightening equipment
- Slide Feeds for Presses

Double Recoil Takes Kicks

ACCORDING to the Army, the tremendous kick of its new atomic cannon is absorbed by an innovation in artillery—two recoil motions. The primary recoil takes care of the big gun's actual "kick," while the secondary recoil absorbs the forces created by the primary, says R. Hoe & Co. Inc., New York, makers of the unusual mechanism.

In recoil, the atomic cannon's entire carriage slides back on stainless steel guides over its central turntable and rear pan. The gun is returned to normal position by a hydro-pneumatic device connected to the carriage.

Easy Does It—Another feature of the 280 mm weapon is the ease with which its giant barrel can be raised and depressed—zero to 55 degrees. This is achieved by a hydro-pneumatic equilabrator. It so balances the barrel that in the event of a power failure one man can operate the mechanism by hand without exerting more than 30 pounds of force on a control wheel, say Army ordnance authorities.

A prime manufacturing problem was precision machining of metal parts weighing up to 1600 pounds. For instance, a surface mirror finish of 4 microinches was required. In one case this was accomplished with a honing machine that was intended originally to finish cylinders of much smaller diameter than those used in the super gun's recoil and equilabrator mechanisms. The machine was rebuilt to accommodate larger work. Extensive alterations also were made on other machine tools, because urgency required the use of existing production equipment.

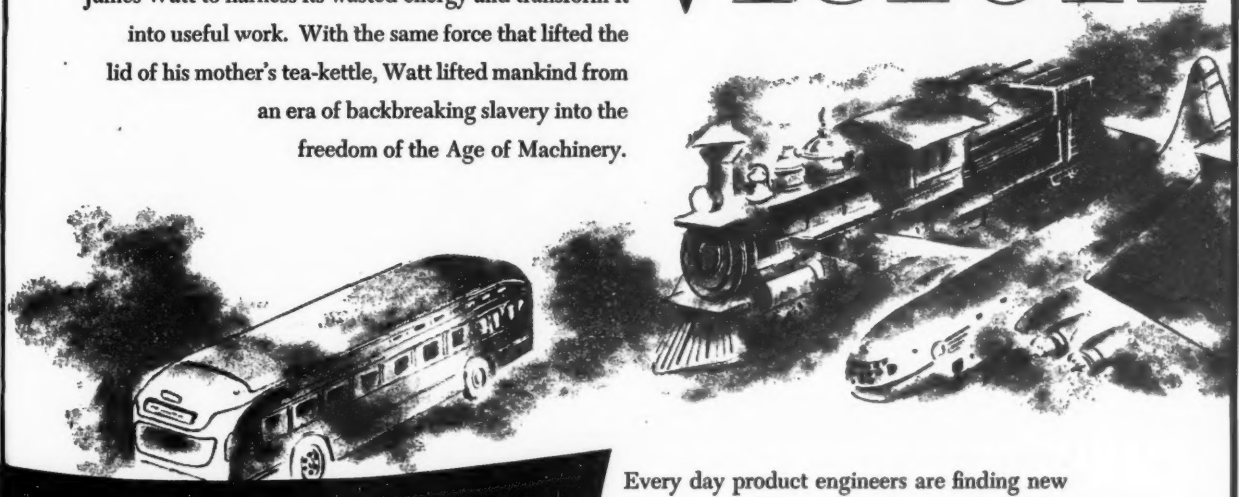
Plastic Pack Saves Nozzles

Protecting their delicate precision spray gun nozzles in shipment and storage is no longer a problem with Binks Mfg. Co., Chicago. A small cylindrical container of clear polystyrene plastic solves the protection, identification and cost problems.

Until now cylindrical cardboard boxes were used, the nozzles being hand wrapped in heavy paper to give snug fit and protection. Seal-

Vision

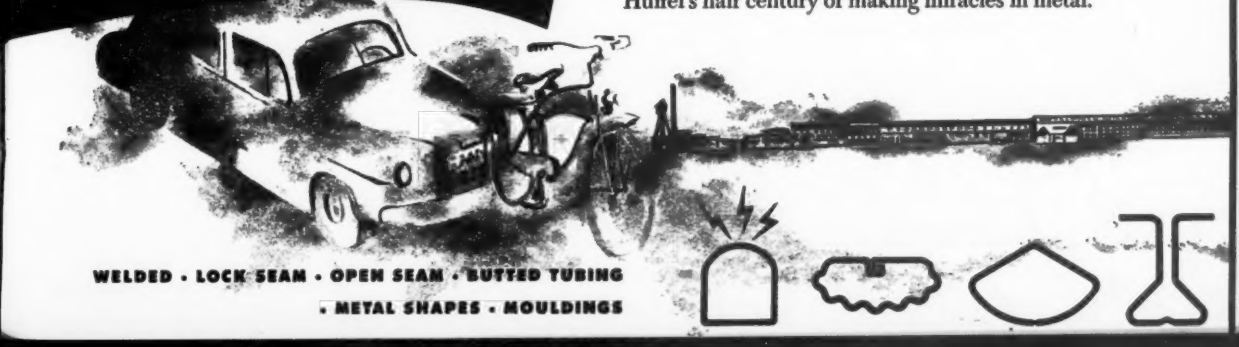
Through centuries of toil, there had been within man's hands the giant Steam, merely awaiting the vision of James Watt to harness its wasted energy and transform it into useful work. With the same force that lifted the lid of his mother's tea-kettle, Watt lifted mankind from an era of backbreaking slavery into the freedom of the Age of Machinery.



Van Huffel

TUBE CORPORATION · WARREN, OHIO

Every day product engineers are finding new applications for Van Huffel cold formed metal shapes and tubing. Whether it's railroads or row-boats—busses or bombers—trailers or trucks—the uses are limited only by the vision of men who plan for tomorrow and capitalize on Van Huffel's half century of making miracles in metal.

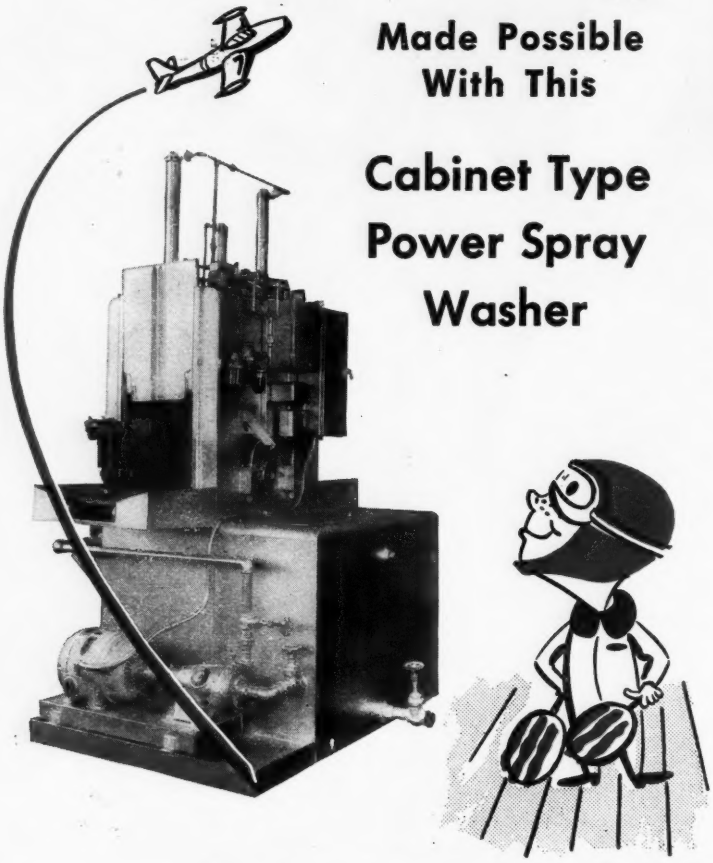


WELDED · LOCK SEAM · OPEN SEAM · BUTTED TUBING
· METAL SHAPES · MOULDINGS

Clean Take-Offs

Made Possible With This

Cabinet Type Power Spray Washer

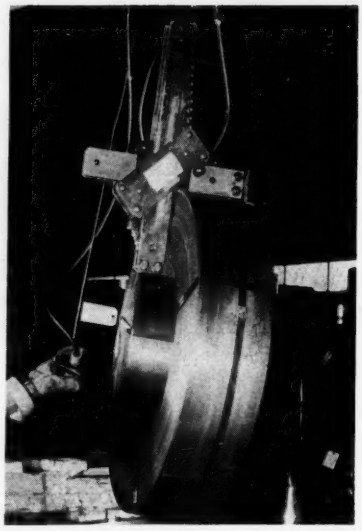


Indicative of the versatility of Peters-Dalton engineers is the Industrial Washing Equipment illustrated above. It is a type of installation that can only be utilized by a few specialized manufacturers. This Cabinet Type Power Spray Washer has been designed for washing aircraft engine cylinders after machining—a most important step in meeting the high standard of finishing required for vital parts such as these.

Catch-all methods are not satisfactory for industrial washing needs. Metal cleaning equipment should be designed for the specific product and process. PD engineers, with their extensive background of experience and knowledge in this field, are available to discuss your problems for between-operation cleaning or paint preparation. If you would like us to tell you more—write, wire or phone.

PD Paint Spray Booths PD Drying and Baking Ovens
PD Dust Collecting Systems PD Industrial Washing Equipment

Peters-Dalton INC.
17892 Ryan Road • Detroit 12, Michigan



One-Man Grab

One floor man can handle both hoist and grab on this coil handler introduced by Dixon Automatic Tool Co., Rockford, Ill. Two models take coils up to 12 or 24 inches wide, in 2000 and 5000-pound sizes. Safety lock maintains positive grip at all times. As the crane lifts, the grab automatically adjusts to the coil size

ing and identification stamping completed the operation. The plastic container has a molded positioning pin which centers the material passage of the nozzle.

The self-locking cover contains a restraining collar which completely protects the delicate precision orifice. Thus when the cover is in place, the nozzle is firmly held top and bottom and identification can be made visually.

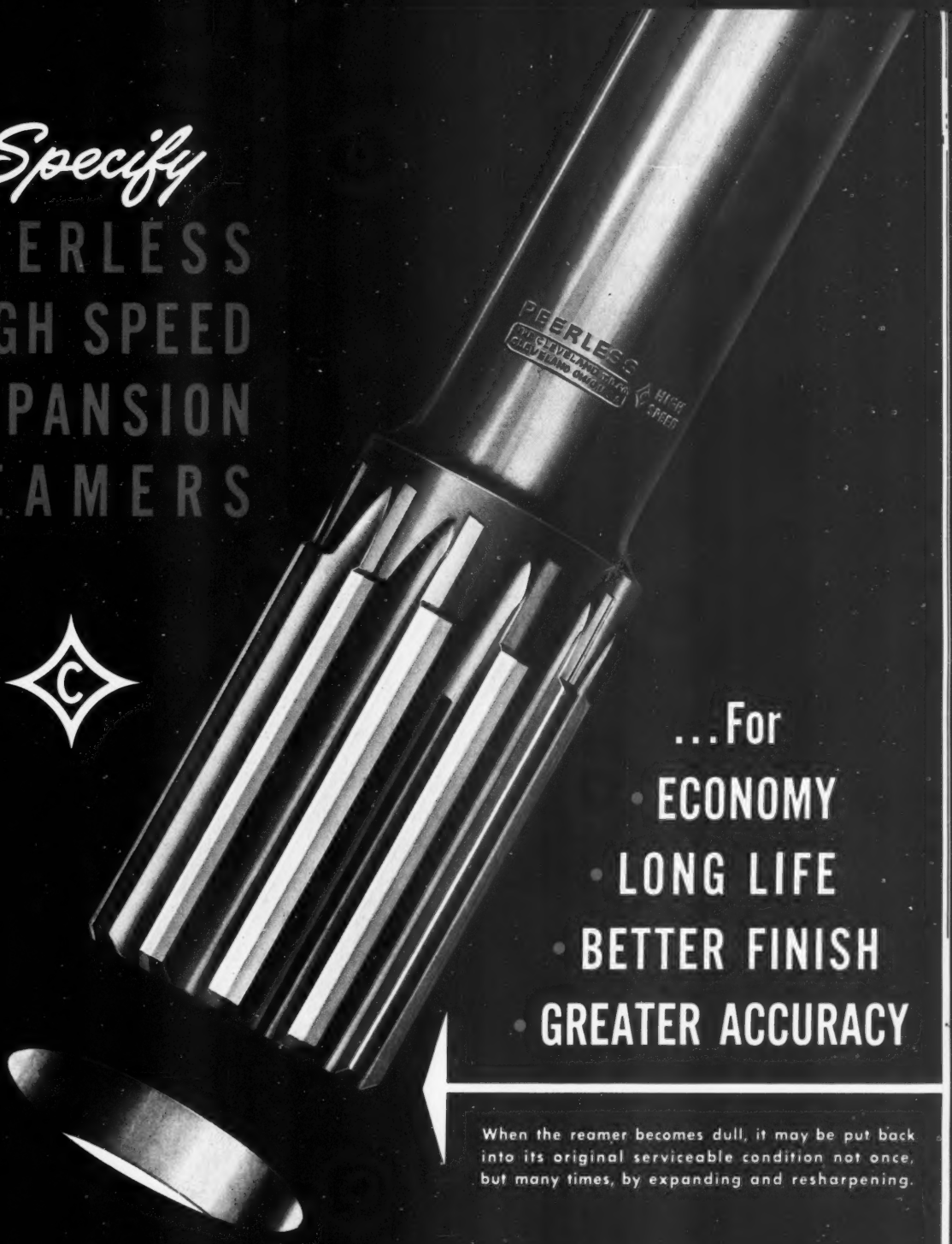
Transmitter Weighs 29 Ounces

Initial mass production of a hand-sized transmitter designed to operate in the 152-174 mc frequency band, is announced by the Communications & Electronics Division, Motorola Corp., Chicago.

The compact unit, weighing only 29 ounces, has a power output of 20 to 40 milliwatts and a tested optimum range up to 5 miles. Contained within a seam-welded housing 7⅜ x 2½ x 1¾ inches, is the complete transmitter including self-contained dry batteries and microphone. The rigid chrome loop antenna doubles as the carrying handle.

Specify

PEERLESS HIGH SPEED EXPANSION REAMERS



...For
- ECONOMY
- LONG LIFE
- BETTER FINISH
- GREATER ACCURACY

When the reamer becomes dull, it may be put back into its original serviceable condition not once, but many times, by expanding and resharpening.

Telephone Your Industrial Supply Distributor

THE CLEVELAND TWIST DRILL CO.

1242 East 49th Street • Cleveland 14, Ohio

Stockrooms: New York 7 • Detroit 2 • Chicago 6 • Dallas 2 • San Francisco 5 • Los Angeles 58

E. P. Barrus, Ltd., London W. 3, England

Appearances Can Be Deceiving

You can be fooled by steel castings, too. Many faults . . . internal flaws — improper composition — non-uniformity . . . may be concealed by a perfect finish . . . but nevertheless present to make a casting unsound — unsuited for an exacting job. That's why rigid metallurgical control, precision labor techniques, and many painstaking inspections play such an important part in the production of Sivyer castings. Manufacturers who demand longer service life and extra dependability know that a casting must measure up to the highest standards of the industry to bear the famous Sivyer Ⓢ Look for it.

SIVYER

SPECIALISTS IN HIGH ALLOY AND SPECIFICATION STEEL CASTINGS

SIVYER STEEL CASTING COMPANY • MILWAUKEE Ⓢ CHICAGO Ⓢ MAIN OFFICE: 1675 SO. 43rd ST. • MILWAUKEE, WIS.

Meter Plant Under Way

Ground-breaking ceremonies for Westinghouse Electric Corp.'s new $10 million meter plant at Raleigh, N. C., were held Nov. 18.

J. M. Wallace, manager of the meter division, says the plant is being built to relieve some of the facilities at the division's headquarters in Newark, N. J. The Newark facilities have been severely taxed in recent years by defense requirements for electrical measuring instruments and relays.

Erection of the new plant, which will consist of two buildings with an interconnecting wing, is scheduled to begin about March 1, and installation of the meter socket production department will begin in late July or August. The first meter is expected to be in production late in 1953.

The one-story brick and corrugated asbestos structure will be 1020 x 420 feet. The office building will be 460 x 80 feet, while a connecting one and two-story wing between the office and plant will be 180 x 80 feet. The second story of the wing will house office air conditioning apparatus and engineering laboratory generating equipment. The building project will provide approximately 500,000 sq ft of floor space.

Small Cams in Large Numbers

Designed especially for milling large numbers of cams less than 3 inches in diameter with reduced production time is a unique machine developed by American Cam Co., Hartford, Conn.

The machine is an adaptation of a standard cam milling machine and has a maximum throw. Reduced to bench size, it can be operated at much faster speeds with fingertip control and quicker clearance between pieces.

Fasteners for Tight Spots

A quick-acting, self-locking fastener particularly suited for securing water and gas tight casings and airborne equipment is manufactured by Dzus Fastener Co., Babylon, N. Y.

No tools are required for the operation of the fastener as it has an enlarged head which can be grasped

For safer assemblies use the dependable

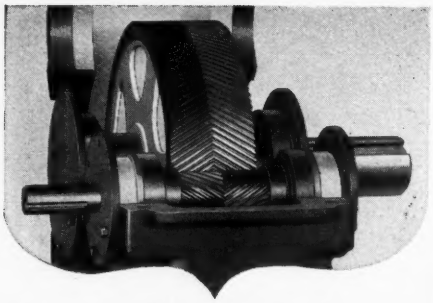
extra strength

of Cleveland High Carbon Heat Treated Cap Screws

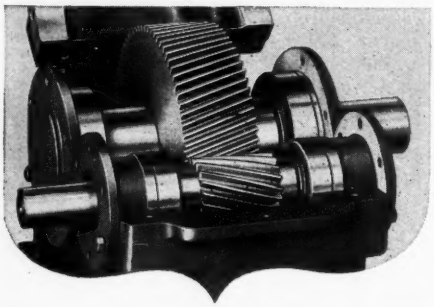
• For assembly jobs needing fasteners of high tensile strength, it pays you to use popular Cleveland High Carbon Heat Treated Cap Screws—those accurately formed, extra strong screws. They're toughened by heat treating—but that's not the whole story of their dependable holding quality. They're notably *stronger* because made of high carbon steel by the Cleveland-developed Kaufman *Double Extrusion* Process of cold forging—a method that assures you fasteners in which the steel's grain flow conforms to the contour of the screw. Controlled high temperature hardening and drawing give them the extra benefits you expect from heat treated parts. Be sure to specify and buy Cleveland High Carbon Heat Treated Cap Screws.

CLEVELAND *Top Quality* FASTENERS

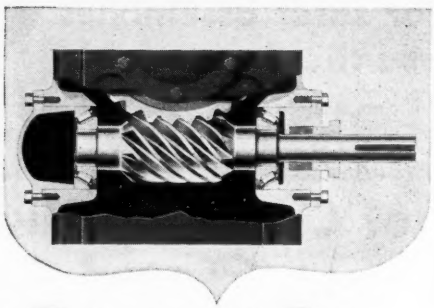
THE CLEVELAND CAP SCREW COMPANY
7935 East 79th Street, Cleveland 4, Ohio
Warehouses: Chicago • Philadelphia • New York • Providence
originators of the Kaufman DOUBLE EXTRUSION Process



A Complete Line of Speed Reducers



HERRINGBONE · HELICAL · WORM GEAR



for Unbiased Selection of Type

• Horsburgh & Scott Speed Reducers are available in 3 general groups, 12 distinct types in many sizes and hundreds of standard ratios. Many considerations, such as speed of driving and driven shafts, shape of housing and characteristics of drive, point definitely to one specific unit as the best drive for a particular duty. Having such a complete line to select from, engineers have exceptional freedom for unbiased selection of the right reducer for the job.

THE HORSBURGH & SCOTT CO.
GEARS AND SPEED REDUCERS
5112 HAMILTON AVE. • CLEVELAND 14, OHIO, U.S.A.

Send note on Company Letterhead for Speed Reducer Catalog 46

in the hand. A small wire form replaces the usual receptacle or spring with the result that very little mounting space is required in the supporting frame or casing.

Engine Standards Checked

FOLLOWING successful standardization of gasoline-fueled internal combustion engines in 3 to 4-inch bore sizes, the Defense Supply Management Agency has launched similar standardization of engines in 4 to 5-inch and 5 to 6-inch bore sizes. Following tests and acceptance, the Department of Defense will freeze specifications.

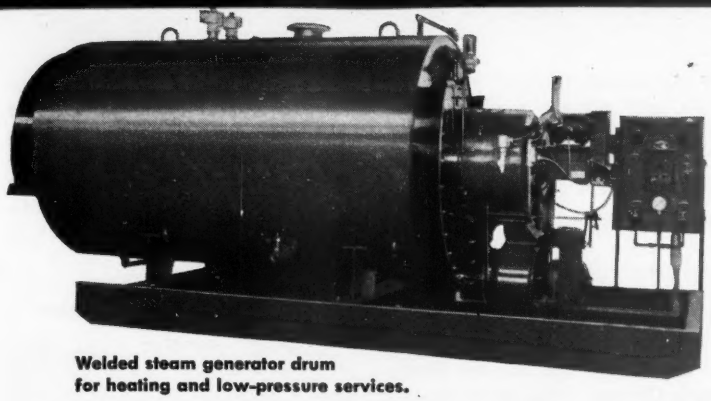
Object is to ease the logistics problem by reducing the number of parts that have to be procured and stocked at depots in various parts of the world in order to maintain and repair engines. In standardizing the 3 to 4-inch bore engines, the number of "high-mortality" wearing parts was reduced from 1187 to 59. A comparable achievement is hoped for in the case of the 4 to 5 and 5 to 6-inch bore engines.

Lots Of Builders—The contractors who are building the 4 to 5-inch bore test engines with standardized interchangeable wearing parts are: Twin Coach Co., Kent, O.; International Harvester Co., Fort Wayne, Ind.; Wisconsin Motor Co., Milwaukee; Waukesha Motor Co., Waukesha, Wis.; Minneapolis Moline Motor Co., Minneapolis; Hercules Motors Corp., Canton, O.; LeRoi Co., Milwaukee; Buda Co., Harvey, Ill.; and Continental Motor Co., Muskegon, Mich. Contracts for test engines in the 5 to 6-inch range went to the Continental, Buda, LeRoi, Hercules, Minneapolis-Moline and Waukesha companies, and also to Hall-Scott, Berkeley, Calif.

The Army Corps of Engineers is acting as agent for the military departments in developing the basic information on which the standardized engine program is based.

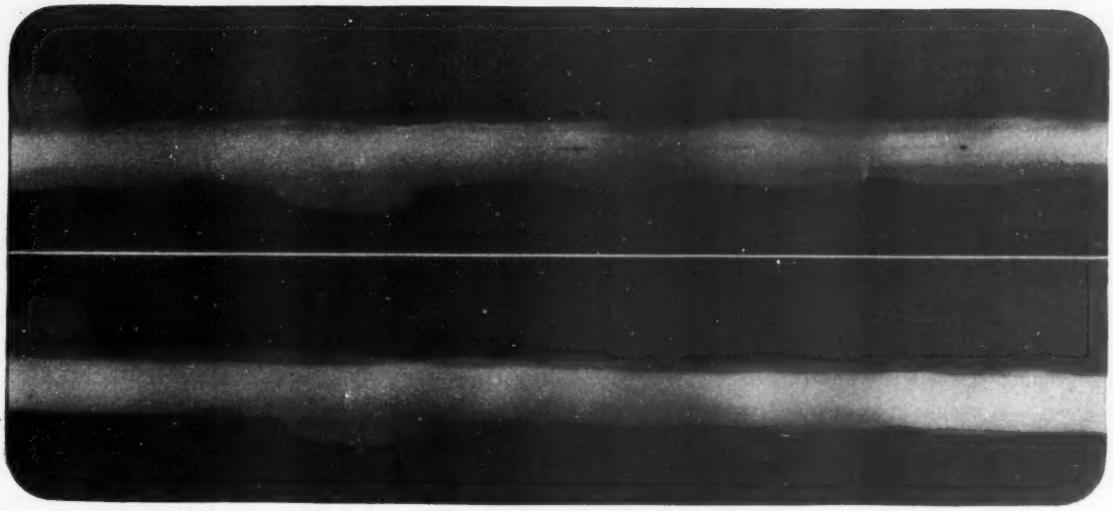
Aluminum Conductors Studied

All phases of the problem of making connections to aluminum conductors will be studied by the electric power connector group of the switchgear section, National Electrical Manufacturers Association, in accordance with the deci-



Welded steam generator drum
for heating and low-pressure services.

Dependability up—cost and weight down—



thanks to RADIOGRAPHY

BECAUSE radiography proves it sound, welding can be used for making better pressure vessels. And with results such as these: In these steam boilers approximately 15% in weight was saved—costs dropped 10% to 20% dependent on design pressure.

Easy to see, isn't it, how radiography opens new fields for welding—why it increases business.

Radiography is quick to detect any serious lack of fusion or gas porosities in a weld. It can help you make sure only top-quality work leaves your shop.

If you would like to know more about how it can help you, get in touch with your x-ray dealer and talk it over.

EASTMAN KODAK COMPANY
X-ray Division • Rochester 4, N. Y.

Radiography . . .

another important function of photography

Kodak
TRADE-MARK

sion made Nov. 12, during the annual NEMA meeting.

A review of available data and published information concerning the basic problems of material flow or creepage, surface protection and electrolysis has been initiated, and an application guide will be prepared as soon as possible.

Thermostats Spot Tank Level

Thermostats solve the problem of keeping a continuous check on the operation of a liquid level controller in a hot asphalt tank at Flintkote Co., East Rutherford, N. J. The system, used in a 15-foot deep dip tank, also gives a positive visual alarm in case the controller fails to function.

Two rows of thermoswitches manufactured by Fenwal Inc., Ashland, Mass., each containing 11 units spaced 6 inches apart, are mounted on opposite walls of the tank. Rows are staggered vertically so that liquid level is actually measured at 3-inch intervals.

By connecting any three thermostats to the three pilot lights, depending on which liquid level is being maintained, the red, yellow or green light gives a constant level reading to the operator.

Anchor Plate Output Boosted

Installation of two automatic heat treating furnaces designed to speed production and improve quality of agricultural implements and rail anchor products at Mid-West Forging & Mfg. Co., Chicago, was recently completed at the company's Chicago Heights plant.

Larger of the two units, a 40-foot convection heated draw furnace capable of treating 600 three-pound rail anchors per hour, produces anchors with a Brinell hardness variation of plus or minus 5 points. The other furnace, 19 feet long, treats spring steel bars at a rate of 3325 pounds per hour.

Fork Trucks to Snow Plows

Snow plow attachments for use on all but their 1000-pound pneumatic-tired fork truck are available from Clark Equipment Co., Battle Creek, Mich.

The plow is a non-hydraulic attachment which is adjusted manually to several blade angles, and which is mechanically adaptable to uneven ground surfaces. The ballast box, mounted directly over truck forks, may be loaded with any kind of material to provide drive-wheel traction.

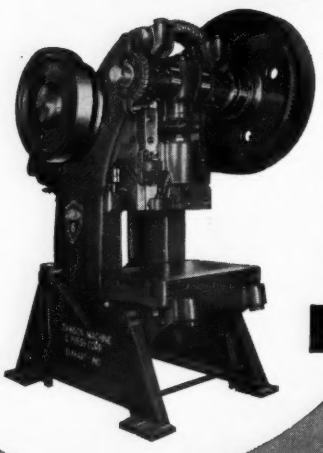
Analyzer Uses Geiger Counter

A Geiger counter x-ray spectrometer that provides at minimum cost a powerful analysis tool for use in research and educational fields as well as for production control is available from North American Philips Co. Inc., Mt. Vernon, N. Y.

Designed to provide a full standard range of operation, the new instrument employs a long-life, air-cooled x-ray tube and a goniometer having a radius of 130 millimeters. Angular range is minus 10 to plus 90 degrees. Angles can be read directly from a dial or from a strip chart.

The new instrument is easily aligned with gages and fixtures provided as part of the equipment. The 90 degree spectrometer has an

EXTRA SERVICE
EXTRA SAFETY
15 MODELS
16 to 90 Ton
JOHNSON
Bonus Built
POWER PRESSES
Will give more service for your production dollar because you can handle larger jobs on smaller presses.



RUGGED • DEPENDABLE • TIME-TESTED
Heavier construction, extra safety features, a list of satisfied users are reasons for an ever-increasing demand for Johnson presses. There's a press for your job, too. Write us today.

FAST, ACCURATE AND POWERFUL HYDRAULIC SHEARING IS HERE...
for mild steel up to 10 gauge

the HYDRA-SHEAR
The Hydra Shear surpasses all others in its field for smooth operation . . . no gears or clutch . . . less curl and burring . . . cannot be overloaded. Write for specifications.

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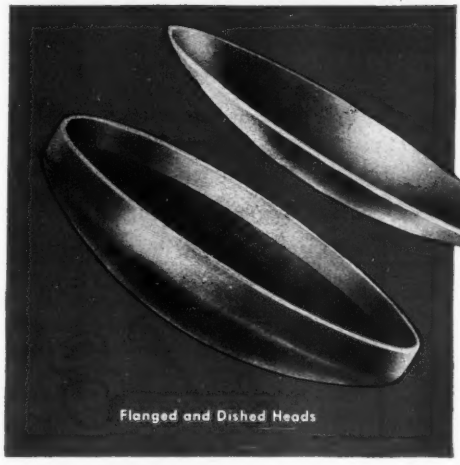
heads---you win *



Flanged and Dished Heads

*when they're made by CLAYMONT

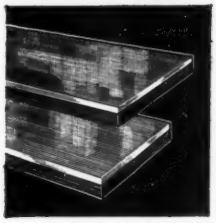
Whatever your needs in flanged and dished heads, you're a winner every time when you call for heads by Claymont.

We can always meet your most exacting specifications because with us the spinning of flanged and dished heads is more than just a job—it's an art into which we put the most painstaking care and specialized know-how.

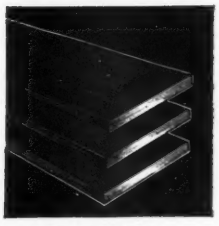
Our flanging department can supply you with flanged and dished heads in diameters from 9 inches to 19 feet and in gauges from 3/16-inch to 6 inches. Made in carbon steel, alloy steel or with stainless steel cladding. We are also prepared to handle head forming operations on both ferrous and non-ferrous metal circles supplied by the customer.

Other Claymont products include Stainless-Clad Steel Plates, Alloy and Carbon Steel Plates, Large Diameter Welded Steel Pipe.

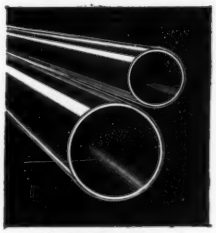
Write or call Claymont Steel Products Department, Wickwire Spencer Steel Division, Claymont, Delaware.



Stainless-Clad Steel Plates



Alloy and Carbon Steel Plates



Large Diameter Welded Steel Pipe

THE COLORADO FUEL AND IRON CORPORATION • Denver, Colorado
THE CALIFORNIA WIRE CLOTH CORPORATION • Oakland, California
WICKWIRE SPENCER STEEL DIVISION • Atlanta • Boston • Buffalo
Chicago • Detroit • New York • Philadelphia

CLAYMONT STEEL PRODUCTS

PRODUCTS OF WICKWIRE SPENCER STEEL DIVISION
THE COLORADO FUEL AND IRON CORPORATION

CF&I

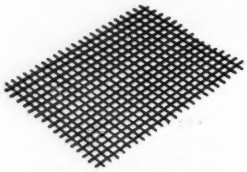
Need any of these in BRASS or COPPER?
Call CHASE!

You can count on Chase for service. Try us for brass, copper and bronze items such as these, whether your needs are for a few pounds or for a ton. Most orders can be filled promptly, direct from our stock. Chase offices (23 of them warehouses) are located in major industrial centers from coast to coast. Call the one nearest you.

COPPER NAILS and TACKS
COPPER STORM NAILS

PERFORATED METAL IN
BRASS, BRONZE and COPPER

BRASS and COPPER
RIVETS, BURS and WASHERS



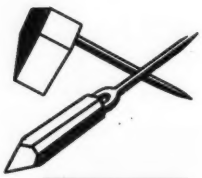
INDUSTRIAL WIRE CLOTH and
BRASS STRAINER CLOTH

INDUSTRIAL and
AUTOMOTIVE FITTINGS

BEARING BRONZE BARS

BRASS and BRONZE
BOLTS and NUTS

BRASS and BRONZE CAP,
MACHINE and LAG SCREWS



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Atlanta	Cincinnati	Detroit	Los Angeles	New Orleans	Providence	Seattle
Baltimore	Cleveland	Houston†	Milwaukee	New York	Rochester†	Waterbury
Boston	Dallas	Indianapolis	Minneapolis	Philadelphia	St. Louis	(†sales office only)

BRASS COTTER PINS
BRASS ESCUTCHEON PINS

Bonding Without Pressure

One of Eutectic Welding Alloy Corp.'s new ChemoTec organic bonding agents is seen above in application technique. The company reports these agents overcome many problems arising from conventional joining of aluminum to copper. In no instance is there need for pressure bonding equipment

on-off shutter for beam cutoff and a scatter shield to reduce stray radiation. The Geiger counter is a special tube which is volume-sensitive to x-rays.

Twist Drill Types Cataloged

A catalog covering a variety of types of twist drills and listing drill sets, drill and reamer blanks, countersink sets, extension sockets, sleeves and holders was published recently by DoAll Co., Des Plaines, Ill.

Instructions for drill pointing and web thinning and a table giving decimal equivalents of drill sizes are also included. Copies are available through company service stores or main office.

Research Reports Available

Metallurgical advances that are helpful to the automotive, aircraft, and other metalworking industries are described in a group of research reports made available to the public by the Office of Technical Services, U. S. Department of Commerce.

Some of the main listings under which the various reports are made

SMALL STAMPINGS

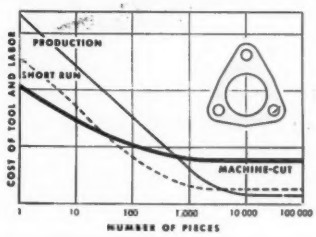
A COST-SAVING, VERSATILE APPROACH TO THEIR MANUFACTURE

Possibly you've always thought that a quick look at the quantity involved decides how a stamping shall be made Sometimes it is done that way but it isn't the sure way to lowest costs.

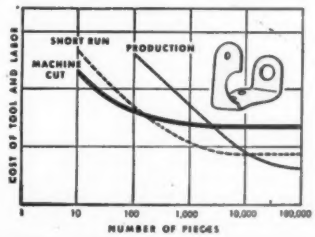
A more scientific approach by the STAMPINGS DIVISION of the Laminated Shim Company in Glenbrook, Connecticut frowns on the term "short run stamping." There is what is known as the short run *method* but there is no definite dividing point between short run and production quantities. Contour, tolerances, material, many other items all affect the manufacturing method when costs are being carefully figured.

NO ONE METHOD IS ALWAYS CHEAPEST; THREE ARE NEEDED

Machine-Cut Method: The STAMPINGS DIVISION goes one step further than Short Run and Production Methods. The Machine-Cut Method, though not strictly a stamping operation is a valuable addition to stamping procedure Custom built slitters, cutters, saws and files use experience-gained techniques to fashion the smaller quantities of parts. No dies are made; only stock punches are used. Obviously labor cost is understandably high but there is no tool charge.



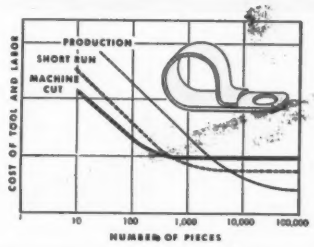
Short Run Method: As quantities increase (and depending upon the complications of contour, material, etc) the economy of a temporary blanking die must be considered to eliminate the labor expense of machine-cutting. When this point is reached, manufacture is by the Short Run Method and the blanking is supplemented by other bench press operations. Here labor cost is at a medium level but a modest tool charge is incurred.



Production Method: As quantities increase the Production Method using standard dies with high speed automatic presses becomes more attractive. A relatively high tool charge can then be amortized over a great number of parts. Labor charge is negligible.

The Production Method as developed by the STAMPINGS DIVISION is offering unusual cost saving possibilities because of the new low-cost, full service Hecht-type die developed by the company for certain applications.

It is interesting to note that sometimes a very small quantity of parts would require a standard die because of complications or close tolerances or tough materials involved. Thus occasionally a very small quantity goes into the production classification.



LOWEST COST IS ASSURED WHEN SUPPLIER HAS ALL THREE METHODS

The illustrations show typical stamped parts along with relative costs and breaking points for each of the three manufacturing methods. Unless a supplier can offer all three, his costs cannot always be low For a given quantity, only *one* method can be most economical.

ONE OR ONE MILLION PARTS FROM SAME SUPPLIER

An important corollary to the above is that an experimental part in small quantities can be handled by the same supplier when full production quantities are needed

Further, it is important that a supplier be fully informed, if possible, on later or total requirements for a given part. As the charts point out, such information will affect manufacturing method and make possible cost reductions.

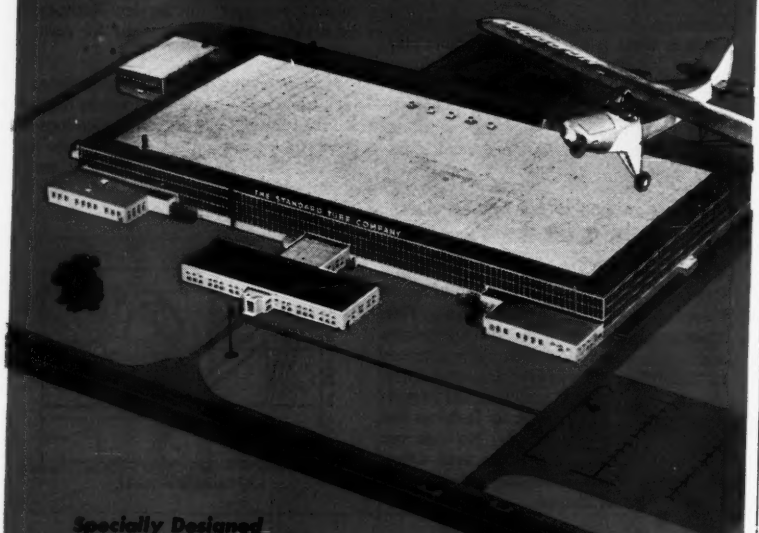
FURTHER INFORMATION AVAILABLE

An illustrated 12 page brochure describing in greater detail the methods mentioned above is available on request to the

STAMPINGS DIVISION
Laminated Shim Company, Inc.
3412 Union Street, Glenbrook, Conn.

IN PEACE TIME
DEFENSE TIME
EVERY TIME

MAKE "Standard" YOUR SOURCE
FOR WELDED TUBING EFFICIENTLY PRODUCED!



Specially Designed
New Modern Plant with
Complete Facilities for Production of:

★ Welded Mechanical ★ Boiler and Heat Exchanger
★ Welded Stainless ★ Exclusive "Rigidized" Patterns

Complete Range of Electric Weld Tubing for
Structural, Mechanical and Pressure Applications

Here in this great new plant are the most modern and complete facilities for the manufacture of Welded Steel and Stainless Steel tubing found anywhere. Let "Standard's" specialists help you!

ROUND • SQUARE • RECTANGULAR • SPECIAL SHAPES
including UPSET • FLARED • FLANGED • TAPERED

★

STEEL TUBING SIZES: ⅛" O.D. to 5½" O.D. .028 to .260 wall
STAINLESS SIZES: ⅜" O.D. to 3" O.D. .028 to .095 wall

include titanium alloys, protective coatings, high temperature metals, and x-ray spectroscopy. These have all recently been cleared of secrecy restrictions.

Maintenance Show Readied

TWO SESSIONS of the forthcoming Plant Maintenance Conference will be devoted exclusively to a discussion of maintenance in steel mills and fabricating plants, two more to maintenance in foundries.

The conference takes place at Public Auditorium, Cleveland, Jan. 19-22, concurrently with the Plant Maintenance Show. In all, thousands of machines and products needed in maintenance will be exhibited.

Sessions devoted to steel mills and fabricating plants, and those devoted to foundries, will be round-table discussions. They will be held simultaneously. First session will take place Tuesday, Jan. 20, from 2 to 4:30 pm; the second at the same time the next day. Those attending the first session will be encouraged to submit questions for answer at the second meeting.

General Sessions—In addition to the special sessions mentioned, there will be 62 other meetings dealing with general aspects of plant maintenance. These include such subjects as preventive maintenance, sanitation, lubrication, incentive systems, power plants, pumps and piping, maintenance stores, training workers, maintenance budgets, lighting, work standards, building maintenance, electrical and mechanical equipment maintenance, corrosion control and similar problems.

Divided by Size—Problems depending on size of plant and maintenance force will be treated separately so that executive personnel from small, medium-sized and large plants may discuss those subjects most directly involved in their own operations.

Advance registration cards may be obtained from Clapp & Poliak Inc., New York.

Shaper Data Published

Descriptions, design features and complete specifications on both their standard and heavy duty lines of shapers are contained in

HOW CAN YOUR PLANT BE IN *Chicago*.....

AND YOUR RING DEPARTMENT IN *Philadelphia?*

Far be it from us to tell you where in your plant the ring department should be. So far be it, matter of fact, we'd say "Nowhere!"

We *would* like to tell you of the advantages of establishing King as your ring department . . . no matter where your home plant may be.

Economy, efficiency, speed—these and more pluses may suggest themselves to you. We'd like to give you the complete story.

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Ask for your copy of the 1953 Catalog

King

FIFTH WHEEL COMPANY

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dependable
eye protection

keeps you on the safe side

WILLSON SAFETY EQUIPMENT

Combined protection, comfort and appearance make Willson safety spectacles outstanding in value. Choose from a full range of metal and plastic frames—fitted with Super-Tough* heat-treated glass lenses, or Plas-Tough* plastic lenses—every one tested for impact resistance and optical quality. Send for catalog describing our complete line of safety equipment.

STYLE AH

METAL FRAME Latest style spectacle with single bridge. Have Hi-Line temples with a "dressy" look. Also available with side shields. (Non-flammable plastic frame Style WKS shown at top.)

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SUPER-TOUGH*
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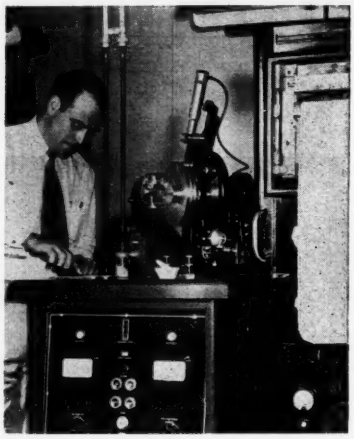
PLAS-TOUGH*

Three popular types of lenses are available for all Willson Spectacles. Clear glass Super-Tough*, Willsonite® Green Super-Tough* and the new Plas-Tough* lenses that combine the impact resistance of heat-treated glass with the comfort of lightweight plastic.

*Trademark

See your WILLSON distributor or write for Catalog
WILLSON PRODUCTS, INC., 233 Washington St., Reading, Pennsylvania



X-Ray Analysis

A research analyst at National Carbon Co.'s research laboratories, Cleveland, works with x-ray diffraction equipment made by North American Phillips Co. Inc., to gain identification and quantitative results. Study here involves phase relations of rare earth compounds, crystal growth of graphite, magnesium dioxide structure

the 12-page catalog published by Smith & Mills Co., Chicago.

Illustrated with two views and full explanation is the patented Smith & Mills solid ram with self-locking mechanism which holds the "ram-to-work" setting. Catalog is available through company offices in Chicago.

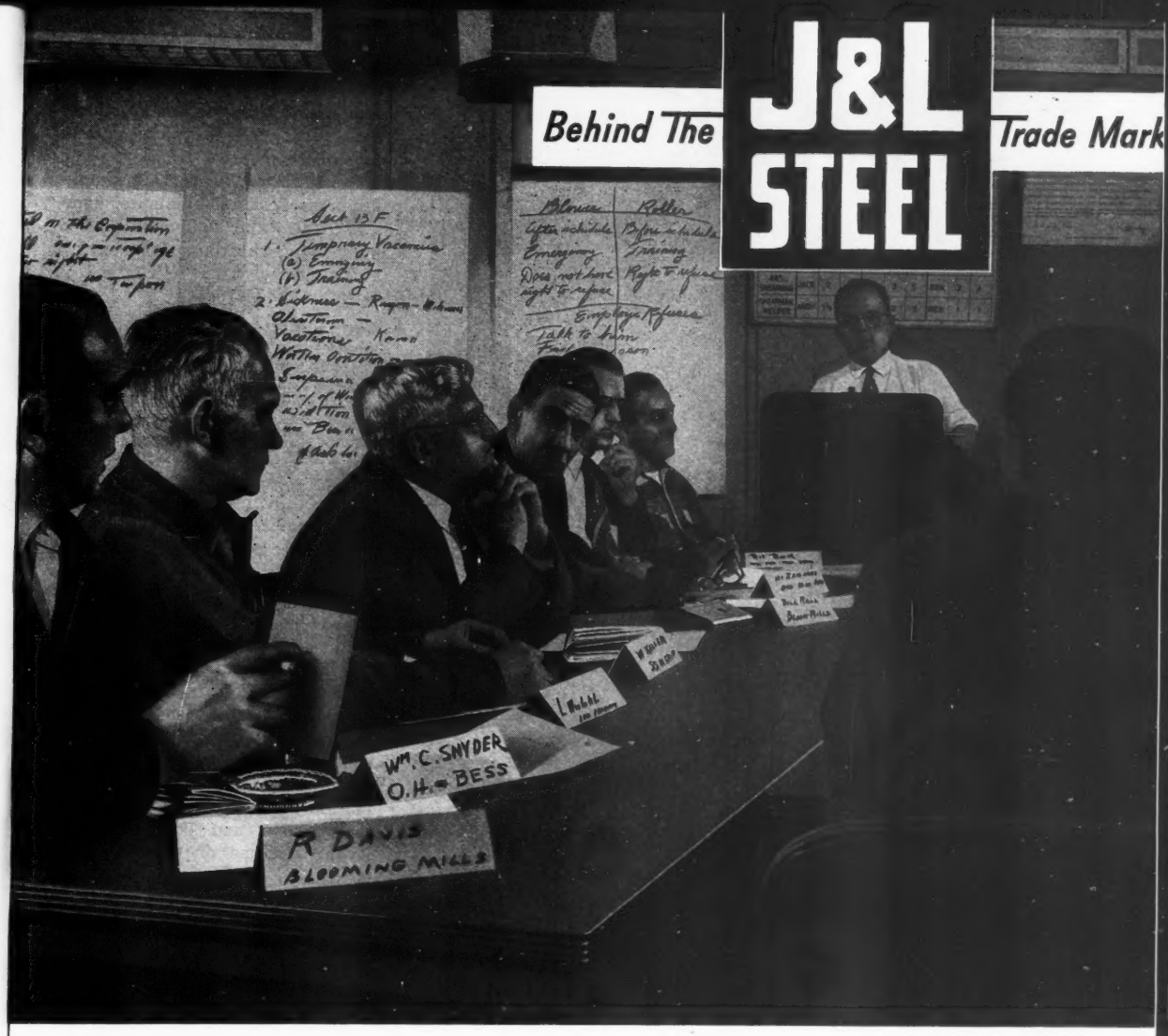
World Electric Code Studied

Nineteen countries were represented by 418 delegates at a series of meetings of International Electrotechnical Commission held at Scheveningen, Holland, in September. Fourteen delegates from the U. S. participated in the meetings dealing mainly with standardization of electrical equipment and components.

Continuous Galvanizing Praised

Continuous galvanizing processes in sheet metal manufacture have been a boon to steel fabricators, according to James L. Yates, general manager of manufacturing, Inland Steel Products Co., Milwaukee, speaking to members of American Zinc Institute, Galvanizers Committee.

Stronger bond between zinc and steel achieved through the contin-



photograph by d'Arazien

MANPOWER and KNOWLEDGE . . .

two principal ingredients of J&L steel

MEN make steel. No mistake about it, muscle and brains are used a-plenty in the myriad processes from ore to ingot to finished products of Controlled Quality J&L Steel.

In the old days steel was as good or as bad as the iron-master's skill. Now, because improved equipment and technical knowledge have taken out guesswork, you get uniform performance from J&L steel, order after order, day after day. But there's more to steel-making than machines and technical knowledge. And there's more to a man thar muscle and brains.

J&L's management knows that. That's why these J&L supervisors who have come right off their jobs in the mills are meeting.

This particular discussion was not for the purpose of exchanging knowledge about steel, though that is done, too, at the proper times. These men, under the guidance of a skilled conference leader, have come together to learn how to help solve the human problems that come up on the job every day.

It is only one of the groups of J&L men who meet regularly to learn more about economics, human relations, and why the J&L management does things in a particular way.

This sharing of knowledge and experience, understanding, and teamwork among steelmen—is just one of the activities going on behind the J&L trademark, all directed toward one end—better steel for you.

JONES & LAUGHLIN STEEL CORPORATION

PITTSBURGH 30, PA.

"If it's metal . . . I'll cut it"

A two-hand, portable, on-the-job tool to cut round stock — bolts or rods. Multiplies applied power 80 times — 50 pounds on the handles means approximately 4000 pounds at cutting edge — and cuts easily in one movement and one second of time.

Saves *labor*, saves *time*, saves *money* — in shop or on the job. Sizes to cut from ¼" up to ¾" annealed bolts in thread.

Other models to cut flat stock, bars, wire, stranded wire rope, straps, chain, cable, etc. Made in fine tool quality to stand up in long hard usage. Every Porter Cutter you can use in your plant on repairs, dismantling, servicing or maintenance saves you money — get acquainted with the Porter Cutter line — write for catalog and consult your Industrial Supply House.

50 pounds pressure on the handles delivers approximately 4000 pounds at cutting edge.

PORTER on the job CUTTERS

H. K. PORTER, INC.
Somerville 43, Mass.

uous strip process permits the manufacturer to form detailed products from galvanized sheets rather than dipping them after forming. The more uniform zinc coating simplifies press work and eliminates damage to dies and equipment caused by varying thickness of material, he claimed.

Ryan Expands Titanium Work

A second contract in research and development of titanium for application to aircraft production has been awarded Ryan Aeronautical Co., San Diego, Calif. Navy Bureau of Aeronautics has ordered the manufacture and testing of a large number of specimens typical of airframe construction.

Award of this contract follows closely an earlier Air Force order aimed at determining the best methods of processing titanium for use in conjunction with exhaust systems. The new contract will provide information needed by the aircraft industry regarding optimum application to aircraft structures of titanium and titanium alloys as compared with aluminum alloys and stainless steel. Ryan was one of the first U.S. companies to form titanium successfully by the drop hammer process. Research at its own expense was started in August, 1951.

Extremely expensive because of high costs of refining from the ore, titanium now costs as high as $25 a pound. The first shipment of titanium sheets under Air Force and Navy contracts is due at the company's plant in about two months. The work, on a long-term basis, will be performed under supervision of the engineering department in the development laboratories.

50-Ton Safe Guards U.S. Relics

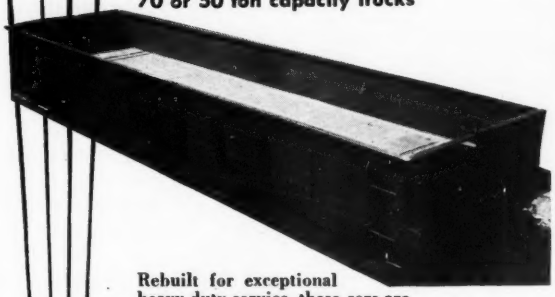
Three of America's most priceless documents, the Bill of Rights, Declaration of Independence and Constitution, will soon be put gently to bed every night in a special safe built by Mosler Safe Co., Hamilton, O.

The giant safe, only one of its kind, will have a built-in elevator which will raise the documents every morning and lower them back into the safe at night. To make

Available!

HEAVY DUTY-MILL TYPE ALL STEEL GONDOLAS

furnished with either 70 or 50 ton capacity trucks



Rebuilt for exceptional heavy duty service, these cars are in excellent condition and can withstand severe abuse, particularly where clam shell buckets or magnetic cranes are used for loading and unloading.

Each car is reconstructed with an inside height of 2 feet 6 inches to reduce the possibility of overloading breakdowns. Whether used for railroad interchange, industrial service or mill type service, these cars will prove efficient and economical to operate.

CFC Gondola cars are reconditioned to include these special features:

- New welded steel floors up to ½" in thickness as specified by customer
- New steel sides and ends up to ⅜" in thickness as specified by customer
- New side and end top chord angles
- Double fish belly type center sills built of steel plate and angles 17" deep at body bolster to end sill and 24" deep at the center of the car. Center sills are continuous.
- Fish belly type side sills 24" deep at center of car
- AB, KC type or straight train line air brakes as specified.

Each car is put into first class operating condition by skilled workmen in Chicago Freight Car's own shops. Built in 1926, these gondola cars will give many years of rugged service. They are priced to give you exceptional values and are ready for prompt delivery.

GENERAL SPECIFICATIONS

Capacity, nominal	100,000 lbs.
Light weight, approx.	48,000 lbs.
Load limit	121,000 lbs.
Inside length	38 ft. 4 in.
Inside width	9 ft. 0 in.
Inside Height	2 ft. 6 in.
Length over strikers	40 ft. 6 in.

Write for specification sheet giving complete data.

CHICAGO FREIGHT CAR... and parts company

CHICAGO, ILL. AUBURN, WASH. PUEBLO, COLO.

MAIN OFFICE: 228 North LaSalle Street, Chicago 1, Illinois

this wrench

can slash your costs 3 ways

TAC Open End Ratchet Wrench

delivers incredible savings wherever "tight" situations prevail involving tubing, pipe, conduit, cable or long studs. Saves at least three ways:

1. **CUTS TIME** on production or maintenance operations because it slips around tubing and down fittings, where you ratchet off or on in mere seconds. Functions perfectly with as little as 7° arc clearance for handle. Reduces workman injury too—TAC can't slip off the work and skin up knuckles.
2. **CUTS COST** on fittings, tubing, etc. Snugs down on fittings, never "barks" or scars the hex fitting.
3. **REDUCES INVENTORY OF HAND TOOLS** required in your tool crib. Several sockets, a few head sizes, and you eliminate over *half* the wrenches you'd otherwise maintain.

"BORROW" ONE— PROVE FOR YOURSELF!

Rated companies may request on Letterhead a sample handle, head and socket, for full trial. We ship on memo billing—returnable for full credit. ACT NOW—"BORROW" THIS MIRACLE WRENCH and prove its value!

Send for free catalog

TUBING APPLIANCE COMPANY
10321 Anza Avenue, Los Angeles, California

this possible, the 50-ton safe's massive doors will be located on the top.

The safe is bomb, fire, burglary and water proof. It is reputed to be the largest in the world.

Adhesive Tapes Save Drafting

Plant layout planning using preprinted Labelon adhesive tape to eliminate drafting of repetitive symbols is saving costly drafting time in more than one-third of all General Electric Co. plants, according to officials of Labelon Tape Co., Rochester, N. Y.

The new tape is reported to save not only drafting time, but also simplifies changes in temporary layouts. These can be made by stripping off the tape from its original position and placing it wherever wanted.

All standard symbols for walls, aisles, conveyors, monorails, center lines, columns, shafts, stairways, etc. are available in either 324 or 648-inch rolls, scaled ¼-inch to 1 foot. Transparent or opaque tapes for reproduction on standard ammonia vapor or photo-copying machines are available.

RCA Shows Electronic Savers

New uses of electronics in the power industries that may save money, time or life of heavy industrial machinery was the theme of the Radio Corp. of America exhibit at the Exposition of Power and Mechanical Engineering held in New York, Dec. 1-6.

Closed circuit television for industrial uses, metal detection equipment, microwave radio communications, and electron microscopy were the devices shown.

Upgrading Executives

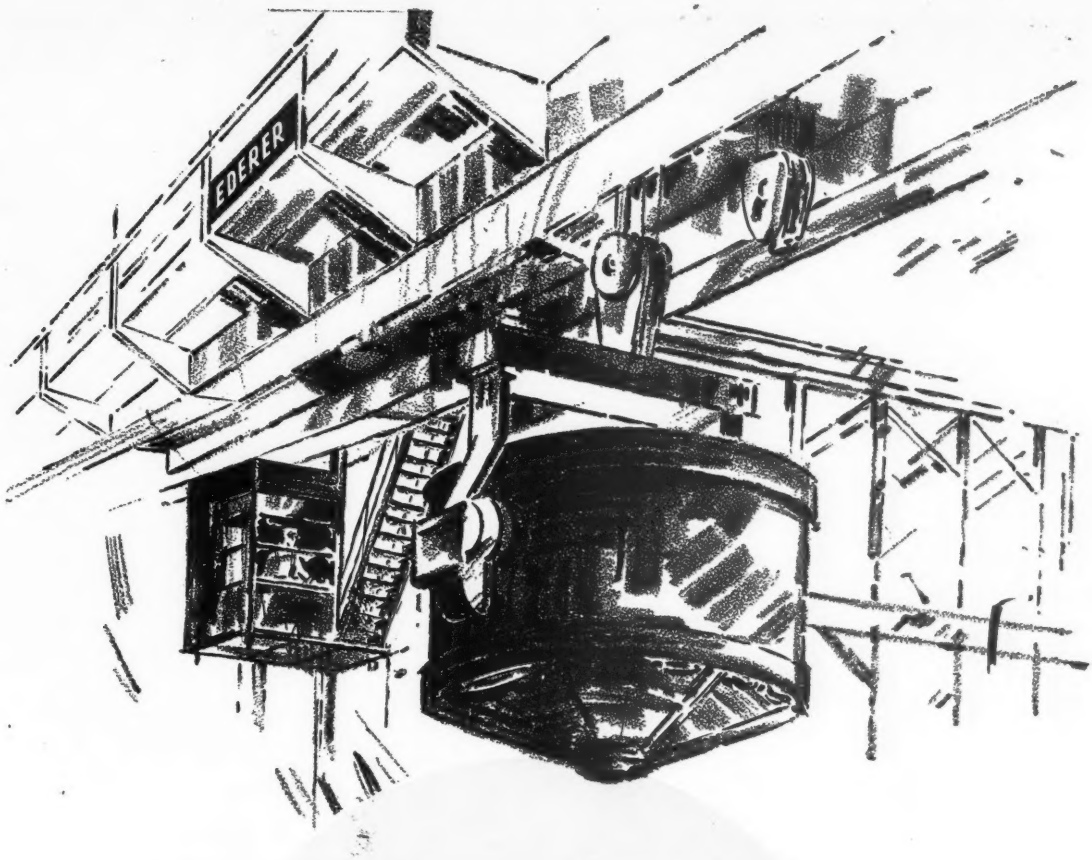
NEW ATTACK on the shortage of qualified top executives has been launched by American Management Association through a program to train businessmen in the technique of developing their subordinates to fill higher positions.

The training program, designated orientation seminars on management development, consists of three two-day meetings offering actual instruction, combined with drill and practice, in the fundamentals of this field. The first series runs Nov. 10-11, Dec. 15-16 and Jan. 12-13; an additional series, Dec. 1-2, Jan. 19-20 and March 2-3; a third, Dec. 8-10, Jan. 26-27 and March 16-17. All will be held at the association's headquarters in New York.

Four basic steps in management development are covered: Inventory of present executives and probable successors, review of executives' potentialities for advancement, the counseling interview to help executives discover their strengths and weaknesses and what to do about them, and application of specific techniques to develop those individuals.

Practice Sessions—Lectures and demonstrations are followed by small-group practice sessions designed to develop facility in coaching the various fundamental techniques. Attendance in each group will be limited to thirty persons so that practice sessions may be kept to not more than six members each.

By spreading each series of two-



For rugged steel mill service

Steel mill service demands rugged performance in a crane — three gruelling shifts a day, 365 days a year — with no time down for maintenance. This calls for a truly extra heavy duty crane such as this 50-ton, 75-foot span crane servicing an electric furnace in a large Western steel mill. It is one of many cranes EDERER has "job-engineered" to the specific requirements of the steel industry.

EDERER — one of the largest crane manufacturers in the West — can "job-engineer" a crane to your requirements. DELIVERY? WHEN DO YOU WANT IT? Write for Crane Bulletin CR-500.

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Export Division: 301 Clay St., San Francisco 11, Calif.

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EDERER

CRANES

Towmotor stacks bundles of pulp 8-high at Rising Paper Co., Housatonic, Mass.

Just takes a touch —

for one man—*any man*—to put capacity loads anywhere they're wanted with Towmotor. Just the man-hours saved on *any one* handling job soon pay for Towmotor . . . often within a few months. And Towmotor Mass Handling equipment is built to guarantee *continuous* mass savings. For your copy of "Man-Hour Thieves," a guide to greater production efficiency, and name of your nearest Towmotor Representative write Towmotor Corporation, Div. 16, 1226 E. 152nd St., Cleveland 10, Ohio.

TOWMOTOR
THE ONE-MAN-GANG
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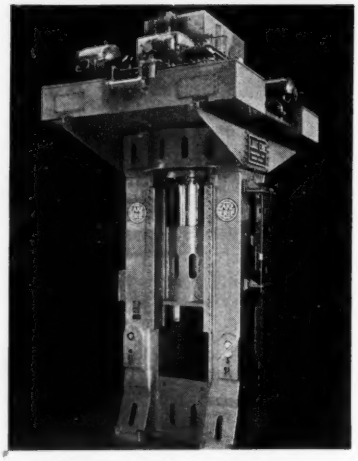
FORK LIFT TRUCKS and TRACTORS
RECEIVING • PROCESSING • STORAGE • DISTRIBUTION



Cold Extrusion Line

Shown during erection at Lake Erie Engineering Corp., Buffalo, is the smallest of a complete line of hydraulic presses ordered by Central Foundry, Holt, Ala. The presses are installed under Army Ordnance sponsorship for making steel artillery shells by the cold extrusion process

day meetings over a period of several months, participants may return to their companies to apply the techniques learned, and thus prepare themselves for the next stage of the development process. On the final day of the series, the chief executive of each organizational unit represented in the seminars will be invited to attend as AMA's guest to receive a concise picture of his role in the management development procedure.

Type 430 Stainless Draws Well

Proof that type 430 stainless steel, a defense alternate for type 302, can be successfully drawn is offered by Armco Steel Corp., Middletown, O. A sink bowl, 6 to 6⅜ inches deep, 13½ x 15½ inches, has been made in one draw without annealing, the company reports, from 20 gage type 430, 2B finish steel.

Bulletin Covers Hand Pumps

Hand pumps in sizes from 7 to 28 gpm for pumping practically any liquid from drums, wheel tanks or underground storage are illustrated and explained in a 6-page bulletin prepared by Blackmer Pump Co., Grand Rapids, Mich. Copies are available free of charge by writing the company.

TO THE WORLD IN GENERAL

and to you in particular . . .

Merry Christmas

AND A HAPPY NEW YEAR

At this season it behooves all of us to look back over the past year to the many accomplishments which have come about in our organizations and review the situation as to betterment of productive capacities for the coming year. A job well done can usually be improved upon and with the new year, it is well to consider equipment and modern manufacturing methods with their attendant savings in cost.

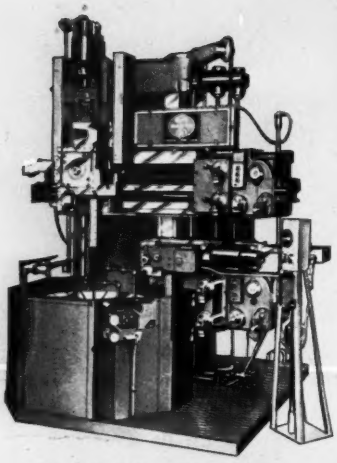
Consider then the advantages which Bullard equipment listed on the following page may afford you in your plant operation during the year 1953 and many years to follow.

THE BULLARD COMPANY
BRIDGEPORT 2, CONNECTICUT

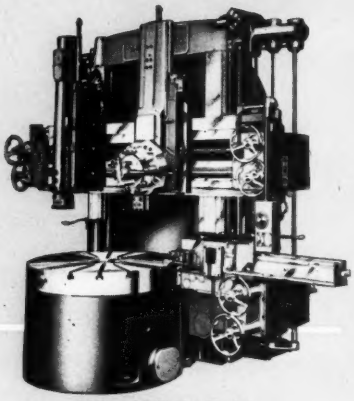
MANUFACTURERS OF MULT-AU-MATICS. CUT MASTER AND MAN-AU-TROL VERTICAL TURRET LATHES. SPACING TABLES. AND HORIZONTAL BORING. MILLING AND DRILLING MACHINES.

BULLARD MACHINE TOOLS

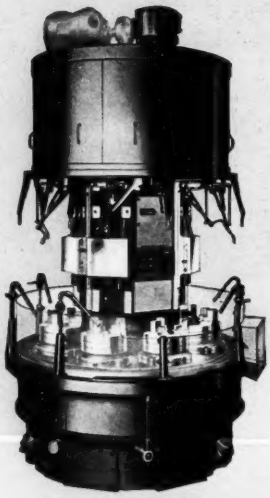
FOR GREATER MANUFACTURING ECONOMY



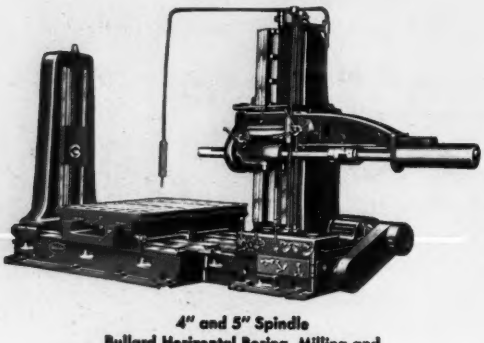
Man-Au-Trol Vertical Turret Lathe
30" — 36" — 42" — 54" — 64" and 74" sizes



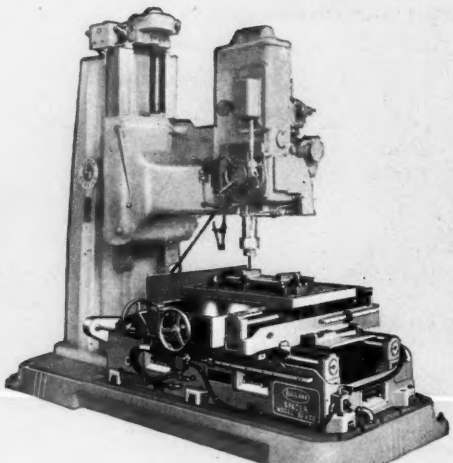
30" and 36" Cut Master
Vertical Turret Lathe with two heads
42" — 54" — 64" and 74" available
with several combinations of heads



Mult-Au-Matic Type "D"
with a wide range of sizes
and numbers of spindles



4" and 5" Spindle
Bullard Horizontal Boring, Milling and
Drilling Machines with 4-Way bed



30 x 20 Spacing Table mounted on Super
Service Drilling Machines. It may also be
mounted on 4' — 5' or 6' Radial Drills

Bullard's variety of machine types covers a wide range of requirements For the diversified industries

Industry Selects BULLARD Equipment for Its MANUFACTURING EFFICIENCY

BULLARD

THE BULLARD COMPANY

BRIDGEPORT 2, CONNECTICUT

Fire-Fighting Truck

Although versatility is the keynote in fork lifts, this Yale truck served even beyond its manufacturer's claims. Pressed into service to aid in f ghting a crude rubber fire at General Tire & Rubber Co., Akron, the truck moved water-drenched outside bales so firemen could get a clear shot at the molten interior of the stockpile

Compression-Formed Tubes Gain

Closer tolerances, better machinability and superior finishes are reported through use of the Rockrite process for cold-sizing tubes by compression instead of tension. The process, used by Tube Reducing Corp., Wallington, N. J.. is also producing finished tubing for cylinder applications.

Compression-forming is a departure from the long-used cold-drawing process. In compression-forming, the desired reduction is obtained by rocking special dies back and forth over a stationary tube. The metal of the tube is compressed against a precision-sized polished mandrel which controls the inside diameter.

Panel Treats Engineer Shortage

Expanded guidance programs to steer young people into science courses at the earliest possible age, and better utilization of the new crop at the end of each college year, are the chief answers to shortages of scientists and engineers. These were conclusions of a panel discussion at the Scientific Apparatus Makers Association midyear meeting.

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Felters can produce a felt that will do
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And we can produce it consistently
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Company.....

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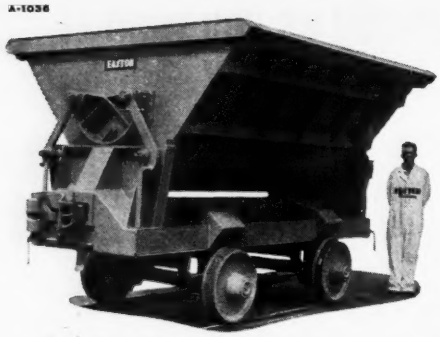
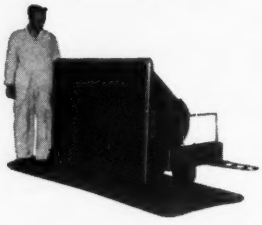


Rocker Dump Cars, gravity dump to either side, capacities 18 to 54 cu. ft., or larger.

Rocker Dump Trailers for all purposes on steel, solid rubber or pneumatic tires



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ROCKER DUMP
Cars and Trailers

EASTON CAR & CONSTRUCTION COMPANY • EASTON, PA. • NEW YORK • PHILADELPHIA • PITTSBURGH

"New Process"
Punches • Dies • Rivet Sets
Compression Riveter Dies
Made to highest standards and uniform quality thus insuring maximum service—
Since 1903
Large inventory of stock sizes of round punches and dies also rivet sets available for immediate shipment. Square, rectangular, oblong and elliptical shapes made to order.
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GEO. F. MARCHANT COMPANY
1420-34 So. ROCKWELL ST., CHICAGO 8, ILL.

CALENDAR
OF MEETINGS

December 7-10, American Institute of Chemical Engineers: Annual meeting, Hotels Cleveland and Carter, Cleveland. Institute address: 120 E. 41st St., New York 17. Secretary: Stephen L. Tyler.

December 11, American Iron & Steel Institute: Regional technical meeting, Hotel Warwick, Philadelphia. Institute address: 350 Fifth Ave., New York 1. Meeting director: Frank Ragland.

December 16-17, Industrial Truck Association: Winter meeting, Hotel Statler, New York. Association address: 900 F St. NW, Washington 4. Secretary: Wm. Van C. Brandt.

December 18, Material Handling Institute: Annual meeting, Hotel Statler, New York. Institute address: 731-732 DuPont Circle Bldg., Washington 6. Managing director: R. Kennedy Hanson.

January 11-13, Institute of Scrap Iron & Steel: Annual meeting, Hotel Commodore, New York. Institute address: 1729 H St. NW, Washington 6. Executive vice president: Edwin C. Barringer.

January 12-13, Industrial Furnace Manufacturers Association: Winter meeting, Hotel Cleveland, Cleveland. Association address: 420 Lexington Ave., New York.

January 12-16, Society of Automotive Engineers: Annual meeting and engineering display, Hotel Sheraton-Cadillac, Detroit. Society address: 29 W. 39th St., New York 18. Secretary: John A. C. Warner.

January 13, Mining & Metallurgical Society of America: Annual meeting, Mining Club, New York. Society address: 11 Broadway, N. Y. Secretary: Lt. Col. Donald M. White.

January 15-17, National Tool & Die Manufacturers Association: Winter quarterly meeting, Sorrento hotel, Miami Beach, Fla. Association address: 907 Public Square Bldg., Cleveland. Secretary: George S. Eaton.

January 19-22, Plant Maintenance Conference: Cleveland Public Auditorium, Cleveland. Managers: Clapp & Poliak Inc., 341 Madison Ave., New York 17.

January 19-23, American Institute of Electrical Engineers: Winter general meeting, Hotel Statler, New York. Institute address: 33 W. 39th St., New York 18. Secretary: H. H. Henline.

January 20-22, Caster & Floor Truck Manufacturers Association: Winter meeting, Roosevelt hotel, New York. Association address: 27 E. Monroe, Chicago. Secretary: H. P. Dolan.

January 21-22, Steel Shipping Container Institute Inc.: Winter meeting, Pierre & Hampshire House, New York. Institute address: 600 Fifth Ave., New York 20. Secretary: L. B. Miller.

January 22, American Coke & Coal Chemicals Institute: Regional meeting, Edgewater Beach hotel, Chicago. Institute address: 711 14th St. NW, Washington 5. Executive secretary: Samuel Weiss.

January 22-23, Steel Plate Fabricators Association: Annual meeting, Palmer House, Chicago. Association address: 37 W. Van Buren St., Chicago. Secretary: Dwight Evans.

January 23, Malleable Founders' Society: General meeting, Hotel Cleveland, Cleveland. Society address: Union Commerce Bldg., Cleveland 14. Managing director: Lowell D. Ryan.

January 26-28, Truck-Trailer Manufacturers Association: Annual meeting, Edgewater Gulf hotel, Edgewater Park, Miss. Association address: 1024 National Press Bldg., Washington. Managing director: John B. Hulse.

January 26-30, American Society of Heating & Ventilating Engineers: International heating and ventilating exposition, Grand Central Palace, New York. Society address: 51 Madison Ave., New York 10. Secretary: A. V. Hutchinson.

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MASTER GEARS

Designed by gear specialists and produced by the generating method to assure maximum reliability of checking results, Illinois Tool Works Master Gears give a *true* picture of production gear performance. They simplify functional gear checking operations, too, because all critical dimensions for checking calculations are clearly marked on each master. You can be *sure* of gear accuracy . . . and gear performance . . . when you check with Illinois Tool Works Master Gears!

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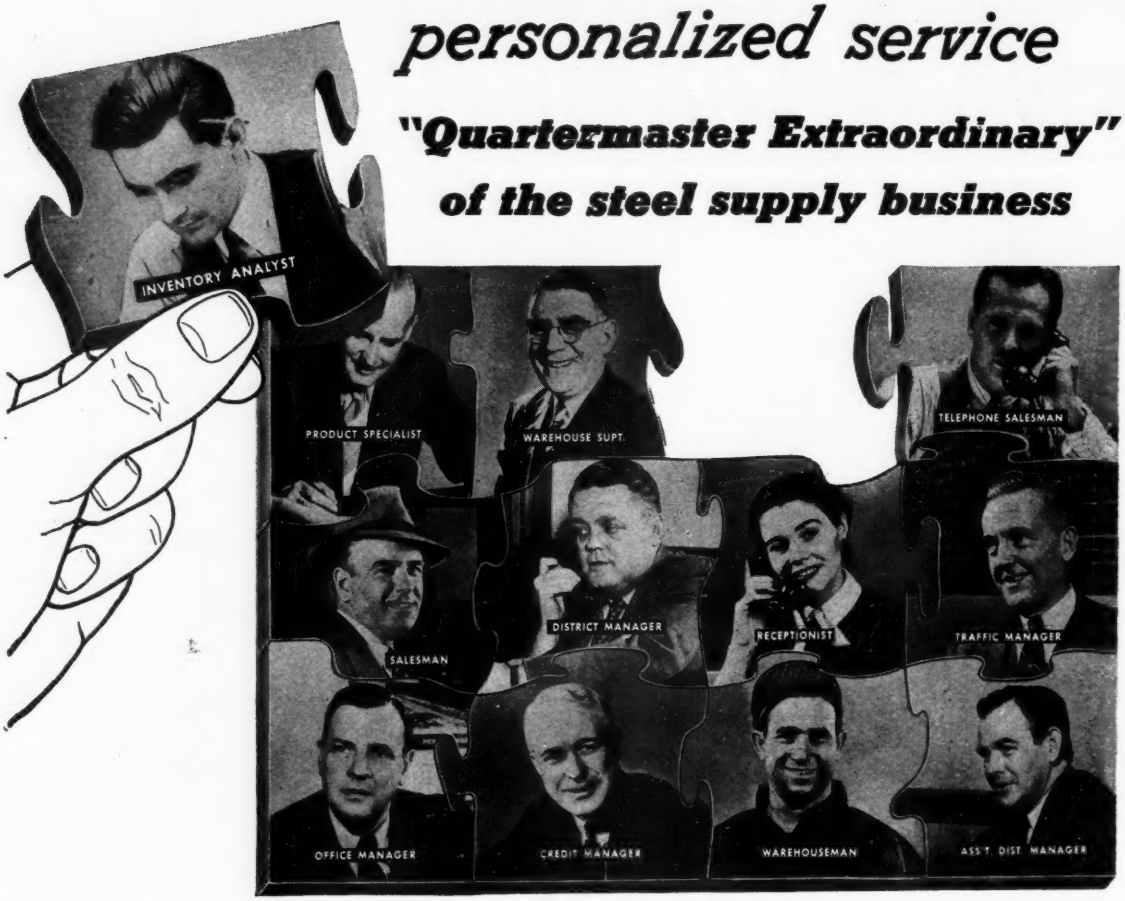

THE principal job of each Inventory Analyst is to keep his warehouse well stocked so that your orders can always be filled in the shortest possible time. His specialized knowledge of steel sources, mill schedules and the stocks of all our 14 warehouses is of particular value to you when you want to locate special types of steel, an item not ordinarily stocked, or steel that may be in short supply. He is, in effect, your purchasing agent for steel. Efficient buying, based on his knowledge of your requirements, helps us maintain a schedule of reasonable prices.

Whether your steel requirements are run-of-the-mill or out-of-the-ordinary, talk to your U. S. Steel Supply salesman. He is your personal contact with one of the most efficient business teams at your command. Through him, the personalized services of U. S. Steel Supply specialists are concentrated on your needs. Their services are given promptly, courteously and completely.

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TULSA · YOUNGSTOWN

UNITED STATES STEEL

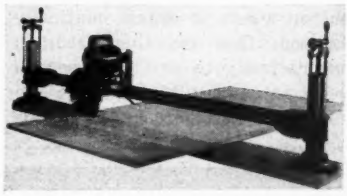
NEW PRODUCTS and equipment

Reply cards on page 159 will bring you more information on any new products and equipment in this issue

Long-Railed Sheet Saw

. . . handles 4 x 8-foot sheets

Model MLR-1 saw is available with rails up to 10 feet long and handles 4 x 8-foot sheets with ease. Rails can be tilted from zero to 90 degrees for mitering or rabbeting. Depth of cut is controlled by raising and lowering the screw jack



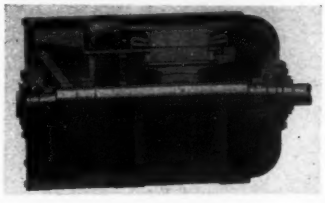
at each end. Saw is drawn through the stock rather than stock being pushed across the table. Hendrick Mfg. Corp., Dept. ST, 11 Selman St., Marblehead, Mass.

USE REPLY CARD—CIRCLE No. 1

High-Slip Induction Motor

. . . smaller, lighter design

This totally-enclosed, fan cooled high slip induction motor is built to accelerate high-inertia loads such as punch presses and hoists. The type KRX is said to be as



much as 30 per cent smaller and 40 per cent lighter than conventional units of similar design. Space and weight reduction are results of an extended-bar design that provides for dissipation of increased heat normally generated by high-slip motors.

The model is available in 30 to 150 hp at 900 and 1200 rpm, 5 to 8 and 8 to 13 per cent slip. Voltage ratings are 220, 440 and 550. General Electric Co., Dept. ST, Schenectady 5, N. Y.

USE REPLY CARD—CIRCLE No. 2

Sheet Metal Power Notcher

. . . cuts down die expense

Power machine built for notching sheet material saves a large part of the cost of expensive dies

and heavy presses in some metalworking operations. A notch as large as 6 x 6 inches can be made in 16-gage sheet. Notches larger and smaller than 90 degrees, as well as some straight shearing jobs, can be performed after a few simple adjustments.

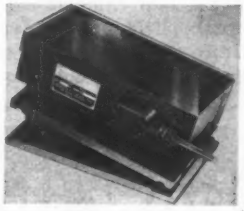
Production rate reaches 180 strokes per minute. The machine operates by foot actuated clutch that leaves both of the operator's hands free for work handling. All moving parts are housed in the steel cabinet, eliminating considerable danger to the operator. Work table is 12 x 18 inches. O'Neil-Irwin Mfg. Co., Dept. ST, 619 Eighth Ave., Lake City, Minn.

USE REPLY CARD—CIRCLE No. 3

Magnetic Sine Chuck

. . . simplifies angular setups

Magnetic sine chuck providing advantages of magnetic chucking,



the Magna-Lock sine chuck, is designed to permit precision angular setups on surface grinders in minutes instead of hours. Simplicity is assured by absence of dials or gages to interpret. Standard gage blocks insure maximum accuracy.

Gage blocks required for a particular single-angle or compound-angle setup are determined quickly by reference to a table of constants. Magna-Lock Inc., Dept. ST 1600, Big Rapids, Mich.

USE REPLY CARD—CIRCLE No. 4

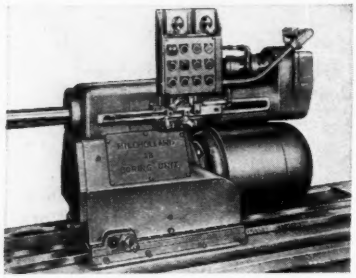
Automatic Boring Mill

. . . spindle speed: 33-500 rpm

Model 3B boring mill is basically a fixed-center horizontal unit with automatic cycle. Speed of the 3-inch diameter spindle is ranged from 33 to 500 rpm by pick-off gears. Body is heavily proportioned and box ribbed semisteel casting. Sleeve is contained at the forward end in two precision Timken bearings and the rear mounted

third bearing is permitted to float.

Feed mechanism is operated by means of a hydraulic pump and fluid motor. System of valves and piping allows cycle adjustments



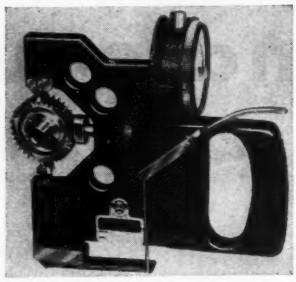
within the range specified. W. K. Millholland Machinery Co. Inc., Dept. ST, 6402 Westfield Blvd., Indianapolis 20, Ind.

USE REPLY CARD—CIRCLE No. 5

Dial Pitch Diameter Gage

. . . checks gear over-roll

External pitch diameter gage checks any over-roll measurement of gears and splines. Gage employs the rotable cam principle featured in the Nilsson standard dial snap



gage to avoid lost motion between gaging anvil and indicator. Floating rolls simulate standard over-roll measurements, with rolls as gaging points. Handles are removable and interchangeable. They can be removed to check wear or for replacement by larger or smaller rolls to fit user's diverse requirements.

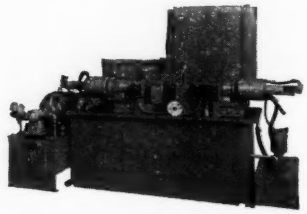
Gage has a retracting lever that collapses the gaging roll and allows the gage to clear the outside diameter of the gear or spline. The unit is equipped with a 0.0001-inch indicator. Nilsson Gage Co. Inc., Dept. ST, Poughkeepsie, N. Y.

USE REPLY CARD—CIRCLE No. 6

Drilling, Deburring Machine

. . . rate: 260 pieces per hour

Electrically interlocked machine drills and deburrs six holes in a steel disk, turning out about 260 pieces per hour. The machine in-



corporates two automatic drilling units, each equipped with a six-spindle multiple head.

Operator loads the part on a locator where it is automatically clamped. One unit then feeds in automatically to drill, the second feeds automatically from the opposite side to deburr. After debur-

how the MAY-FRAN
CHIP-TOTE
works for INDUSTRY

AUTOMATIC SCRAP REMOVAL STEPS-UP PRODUCTION

CHIP-TOTES can remove borings, turnings and chips from practically all high-production machine tools while they are operating. These time-saving conveyor units are assembled from stocked component parts to meet specific requirements of each application. Their design permits flexibility of installation according to type of machine tool, type of metal scrap, rate of removal, coolant flow, available space, etc.

CHIP-TOTES employ patented MAY-FRAN hinged-steel belting, which features interlocking side-wing design to prevent chip fall-through and assure continuous trouble-free operation. Perforated links can be furnished to permit drainage of coolant from chips.

ring, the part is automatically unclamped. Machine can be adapted readily to other drilling and deburring operations by using different multiple heads. Govro-Nelson Co., Dept. ST, 1933 Antoinette, Detroit 8, Mich.

USE REPLY CARD—CIRCLE No. 7

Antirust Paint

. . . available in colors

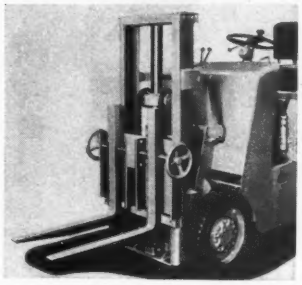
Rust-Cure antirust paint is available in three colors in addition to black, aluminum and clear. Colors are red, gray and green. Paint can be applied by brush or spray directly over rusted surfaces without wire brushing or sandblasting. Monroe Co. Inc., Dept. ST, 10703 Quebec Ave., Cleveland 6, O.

USE REPLY CARD—CIRCLE No. 8

Screw Adjusting Forks

. . . maintains positive position

Screw adjustment permits frequent fork change but maintains positive positioning over the complete line of gas and electric trucks. Frame attaches to the standard load elevator, supporting a pair of large diameter screws with machine-cut Acme threads. Forks can be moved laterally as the screws



are turned. This permits independent action of either fork.

Hand wheels (illustrated) or a detachable crank handle operate the screw. In car loading and unloading, the attachment facilitates work by acting as a manual side shifter. For this application, a single screw to position both forks simultaneously can be supplied. Elwell-Parker Electric Co., Dept. ST, 4205 St. Clair Ave., Cleveland, O.

USE REPLY CARD—CIRCLE No. 9

Bottled Gas Fired Furnaces

. . . even heat, longer pot life

Bottled gas fired furnaces are designed for melting joint compound, asphalt, tar and similar materials. Furnaces are available in pot capacities of 4, 10, 15 and 25 gallons, have enclosed burners with a wide range of heat regulation. No flame impinges on pot, thus insuring even heating, longer pot life.

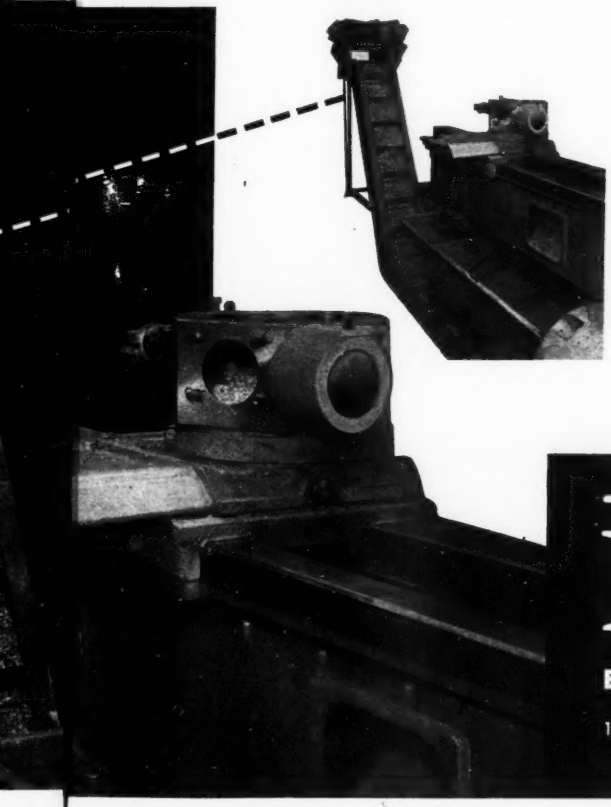
Furnaces are on wheels, can be moved from point to point on the job by one man unassisted. Furnace shell is made of 16-gage steel. Hauck Mfg. Co., Dept. ST, 124-136 Tenth St., Brooklyn 15, N. Y.

USE REPLY CARD—CIRCLE No. 10

Humidity, Temperature Control

. . . functions by liquid contact

This apparatus dries or moistens the atmosphere by the liquid contact method. Air is treated to fix relative humidity and temperature independently. Filtered fresh air enters a spray chamber that provides contact between air and



The CHIP-TOTE has eliminated both machine down-time for scrap removal and manual scrap handling at the General Electric plant in Erie, Pa.

In this installation, brass chips from automatic lathe are funneled onto CHIP-TOTE's hinged-steel belt while lathe is operating. They are carried horizontally until clear of machine's mechanism and then up an incline for discharge into tote boxes. The CHIP-TOTE is synchronized with lathe's metal removing capacity to assure continuous jam-free chip removal. For maximum safety of operation, the chip conveyor is equipped with an adjustable clutch that disengages if pre-set load limit is exceeded.

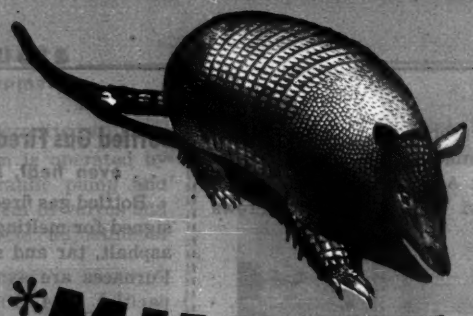
960-MF

Write today for the new CHIP-TOTE catalog.

MAY-FRAN

ENGINEERING INCORPORATED

1725 CLARKSTONE ROAD • CLEVELAND 12, OHIO



*MINUTE . . . OR . .

The armadillo has his complete body and head encased in an armor of small bony plates. When attacked some species can curl up into a ball thus presenting an armored front on all sides. Here nature has designed a strong protective covering.

The protective covering on tanks is armor plate which Standard Steel Spring Company is supplying in huge tonnage to all major tank producers. We work with our customers to properly design the parts, to tool for their most economical production, to expedite delivery and to carefully inspect at every phase of manufacture.

Our facilities include everything needed to produce flat, formed, fully machined—even welded subassembled parts in gauges from ¼" to 4" inclusive. When you think of armor plate think first of Standard Steel Spring Company—America's largest producer.

***THE ARMADILLO**

This small burrowing mammal can be found anywhere from Texas to Argentina. It is protected from its natural enemies by a series of close fitting hinged bony plates.

Standard Steel Spring Company

ARMOR PLATE DIVISION • PENOBSCOT BLDG. • DETROIT, MICHIGAN

ARMOR PLATE

. . MASSIVE

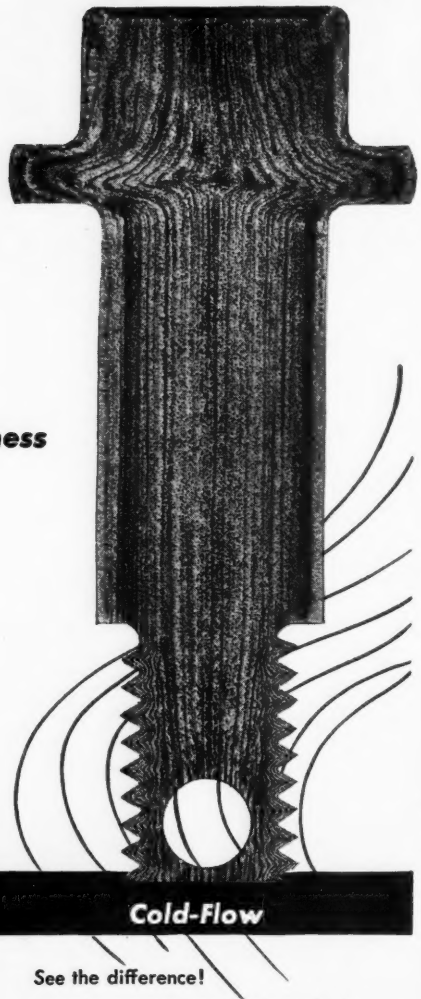
BOTH CARRY ARMOR SPECIFICALLY DESIGNED FOR MAXIMUM PROTECTION!

—for Ordnance

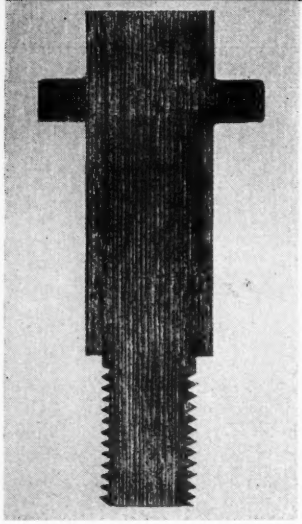
No Structural Weakness

with

CAMCAR COLD-FLOW



Machined **Cold-Flow**



See the difference!

These two parts, one made by high production Camcar Cold-flow and the other by machining, were microphotographed to give visual proof of the strength and accuracy inherent in Camcar Cold-flow.

Notice the smooth structural lines of the Cold-flow part following the entire contour, including the threads. The metal flows where strength is required; machining cuts away the natural grain flow.

Order Camcar Cold-flow small metal parts for maximum tensile strength and close tolerances. You'll be convinced of the tremendous quality and production advantages on your first Camcar Cold-flow order. Send us parts or prints today.

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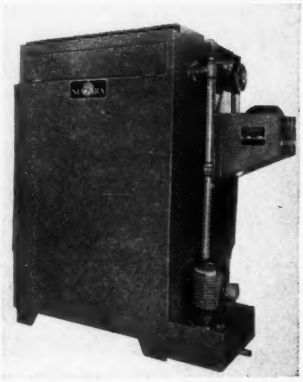
613 EIGHTEENTH AVENUE, ROCKFORD, ILLINOIS

"PRODUCTION DESIGNED FOR YOUR ASSEMBLY LINE"

NEW PRODUCTS and equipment

spray liquid. Spray adds moisture or removes it by absorption or condensation.

Condition of the spray liquid determines moisture content of the air leaving the chamber. Final temperature is fixed as a separate function, thus providing accurate



control of room conditions by means of thermostats and without use of moisture-sensitive instruments. Niagara Blower Co., Dept. ST, 405 Lexington Ave., New York 17, N. Y.

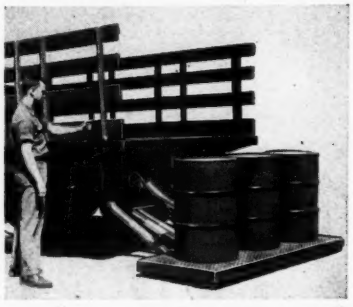
USE REPLY CARD—CIRCLE No. 11

Hydraulic End Loader

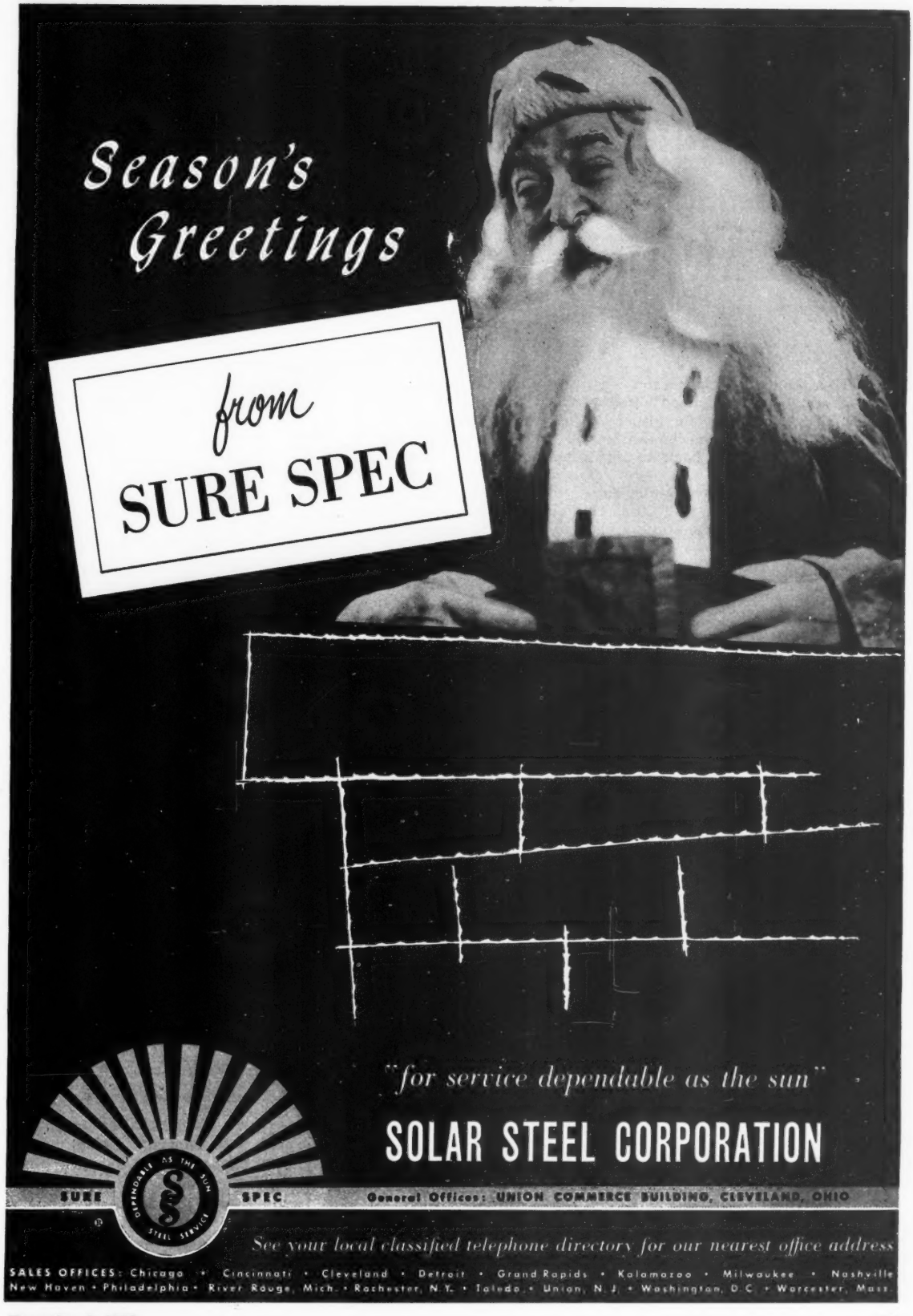
. . . load capacity: 2000 pounds

Hydraulic end-loader is available in four models with loading space of 28 x 84 to 34 x 90 inches. Models are built to fit all trucks 1½ tons and heavier and have load capacity of 2000 pounds.

The manufacturer reports substantial reduction in delivery time



on heavy or bulky materials, and in some cases elimination of the need for loading docks. Attendant advantages are reduction of damage to goods and a lessening


Season's Greetings
from
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"for service dependable as the sun"
SOLAR STEEL CORPORATION
SURE SPEC
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STEEL SERVICE
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Making a one-ton load ...a one-man job on Westinghouse Switchgear

WINSMITH SPEED REDUCERS®

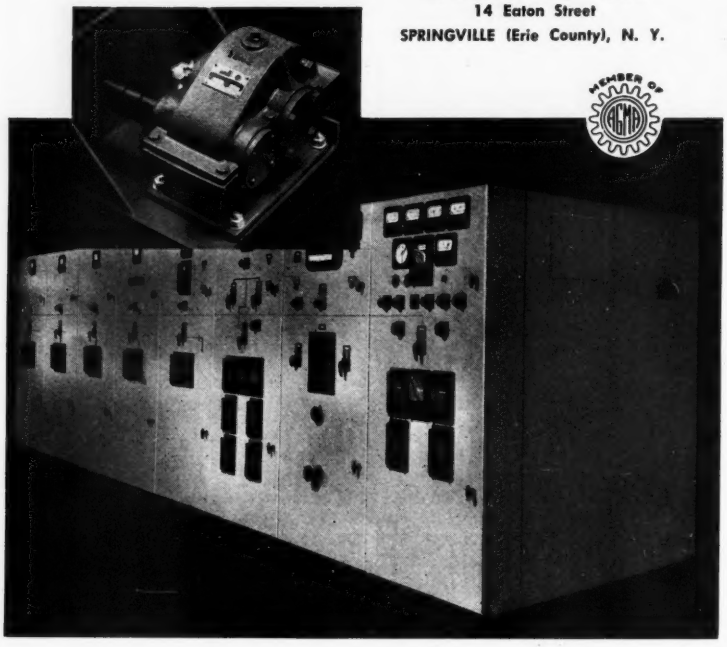
Even though it weighs a ton, when the oil circuit breaker on Westinghouse "Unitized" Heavy Duty Switchgear is removed periodically for inspection, it's only a one-man job. A power-elevating mechanism lowers the breaker onto a hand truck and lifts it back to operating position in about 3 minutes.

Heart of the elevating device is a motor-driven Winsmith Helical Gear Speed Reducer, with an input of ¾ hp at 1725 rpm and a reduction ratio of 9.5 to 1, which operates 4 shaft-connected screw-lifts via a drive chain. Like all components of 100% standardized Westinghouse Switchgear, the Winsmith reducer is itself a product of complete standardization.

Whether your power transmission requirements are intermittent like this switchgear, or continuous . . . heavy duty or light . . . Winsmith is the *only* name in speed reducers you need remember. Standardized worm, helical and patented differential gear units are available to serve your specific needs throughout the 1/100 to 85 hp range, in ratios from 1.1:1 to 50,000:1. *Request Catalog 148 for details.*

WINSMITH, INC.
14 Eaton Street
SPRINGVILLE (Erie County), N. Y.

MEMBER OF AGMA



NEW PRODUCTS and equipment

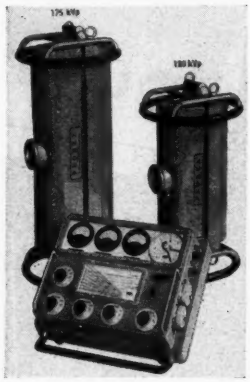
of driver fatigue. Power for the Load-evator is supplied directly from the truck engine to a transmission-mounted power takeoff. Action is controlled by a single spring-loaded lever. Galion Allsteel Body Co., Dept. ST, Galion, O.

USE REPLY CARD—CIRCLE No. 12

Portable Radiographic Unit

. . . combines parts in one tank

Portable x-ray unit for industrial radiography is designed with x-ray tube and other high-tension parts combined in a single all-welded steel tank. High-tension cables, cooling connections, separate transformers and cooling pumps are eliminated. Result is a small, light unit that can be carried by one man into formerly inaccessible working spaces.



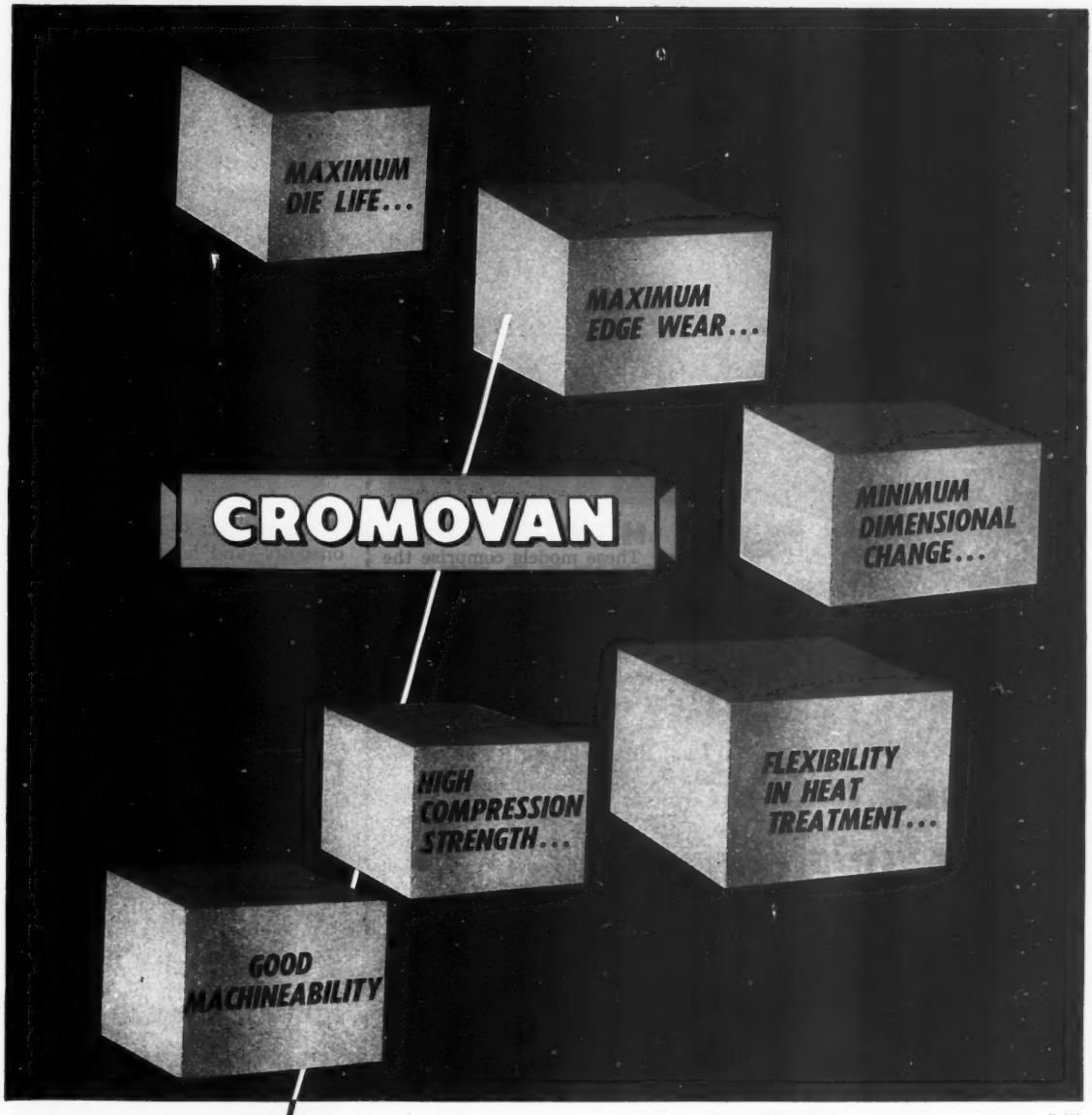
Compact simplicity also results in reduced maintenance and repair costs. Model is called Andrex and is available in 120 and 175 kilovolt peak capacities. Holger Andreasen Inc., Dept. ST, 703 Market St., San Francisco, Calif.

USE REPLY CARD—CIRCLE No. 13

Electric Pallet Truck Line

. . . has rider, walker types

Pallet lift trucks battery-powered with capacity rating up to 6000 pounds, can be supplied with forks to handle any pallet size, single or double faced. Two models are available: Rider and conventional walker type. Rider truck takes power from a single-tray battery arrangement. Convention-



H-271

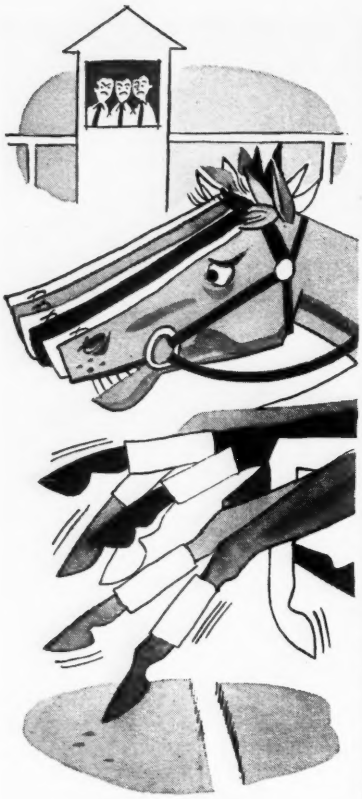
high production champion

CROMOVAN is a *high production* steel for long run requirements on blanking and forming dies where low cost production is vital. Tough, hard, highly alloyed Cromovan produces *two* to *three* times the number of pieces in Laminating, Blanking, Forming, Trimming, and Coining dies. Yet Cromovan costs only slightly more than lower quality grades of steel. Safe, easy to use Cromovan assures consistently uniform results.

OFFICES* AND WAREHOUSES: HARTFORD NEW YORK* DETROIT CLEVELAND DAYTON* PITTSBURGH* CHICAGO BIRMINGHAM* LOS ANGELES PHILADELPHIA*

Firth Sterling INC

GENERAL OFFICES: 3113 FORBES ST., PITTSBURGH 30, PA.



need a better finish?

Torrington Swaging Machines – delivering 4000 hammer blows a minute – work out surface imperfections quickly... produce a finish far superior to that obtained by other reduction methods. Swaging improves the quality of the material, too, and utilizes every ounce of stock.

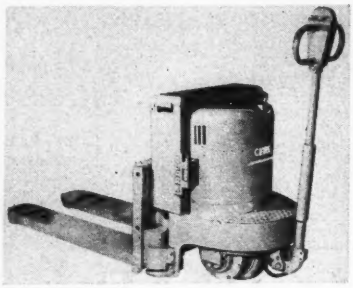
"The Torrington Swaging Machine" describes all the advantages of swaging and gives full details on all Torrington machines. A copy is yours for the asking.

THE TORRINGTON COMPANY
Swager Department
556 Field Street • Torrington, Conn.
Makers of
TORRINGTON NEEDLE BEARINGS

NEW PRODUCTS and equipment

al model has a double-tray battery layout.

Trucks are additions to the Powrworker line. They have double hoisting cylinders for lifting loaded pallets and 5-hp motor-in-wheel



drive. These models comprise the shortest pallet truck design capable of carrying a double-tray battery, assuring utility in congested areas. Clark Equipment Co., Dept. ST, Buchanan, Mich.

USE REPLY CARD—CIRCLE No. 14

Two, Three-Cell Batteries

. . . in plastic containers

Type CME Exide-Manchex batteries are in transparent plastic containers. They are available in both two and three cell units for use in stationary small power applications. Two-cell units are available in end-to-end and side-to-side assemblies; three-cell units in side-to-side assembly only. Electric Storage Battery Co., Dept. ST, Box 8109, Philadelphia 1, Pa.

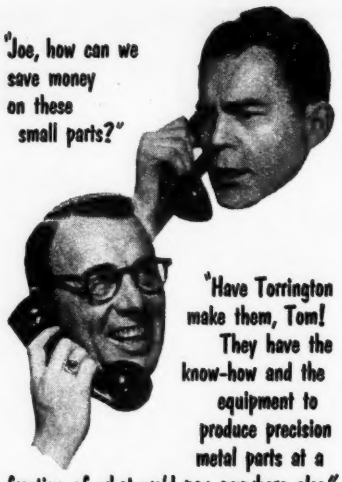
USE REPLY CARD—CIRCLE No. 15

Gear Rolling Fixture

. . . checks size, eccentricity

Model 602 bench-type rolling fixture checks size, eccentricity and roll smoothness of spur and helical external gears. It can be used in conjunction with the Michigan model MTR-50 automatic recorder to place all readings on permanent charts.

Gear to be checked is loaded on a vertical arbor that is moved into mesh with the master gear by an eccentric lever control. By turning the gear manually an 0.0005-inch indicator shows size, eccentricity and smoothness variations. Center distance is adjust-


"Joe, how can we save money on these small parts?"
"Have Torrington make them, Tom! They have the know-how and the equipment to produce precision metal parts at a fraction of what we'd pay anywhere else."

When it comes to holding the line on costs—and holding strict tolerances at the same time—it takes experience and facilities. For over 86 years, Torrington has been making precision metal parts. Production facilities include batteries of automatic and semi-automatic machines—many of them Torrington-designed—and one of the finest heat-treating departments in the world. In addition, we have at our disposal the combined experience and facilities of all 11 plants of The Torrington Company.

If you need precision metal parts, ask us for a quotation. Just send us a sample or blueprint and tell us how many you need.

THE TORRINGTON COMPANY
Specialty Department
556 Field Street • Torrington, Conn.
Makers of
TORRINGTON NEEDLE BEARINGS

able from 2 to 10 inches. Master gear arbor is 1 inch OD. Michigan Tool Co., Dept. ST, 7171 E. McNichols Rd., Detroit 12, Mich.
USE REPLY CARD—CIRCLE No. 16

Tool and Cutter Grinder

. . . table swing: 10¾ inches

Universal tool and cutter grinder, Sterling model G, has vibration dampening cast base and direct drive wheel head using Excello spindles. Wheel head rotates a full 360 degrees, work table swivels

180 degrees. Swing over the table is 10¾ inches; maximum distance between centers, 27 inches.

Controls are located to make it easy to operate the model from front, left or right-hand sides. The grinder is available in both plain and universal types. McDonough Mfg. Co., Dept. ST, Eau Claire, Wis.
USE REPLY CARD—CIRCLE No. 17

Micrometer

. . . protected by chrome finish

Lustro chrome finish protects this micrometer from rust and discoloration. Unit has tungsten carbide tipped anvils. All graduations are sharp and clear against the dull chrome background. George Scherr Co. Inc., Dept. ST, 200 Lafayette St., New York 12, N. Y.
USE REPLY CARD—CIRCLE No. 18

Precision Thread Machine

. . . handles 20 pitch and finer

This small precision thread grinder is designed specifically to handle threads 20 pitch and finer. Finest pitch recommended is 124 on a U. S. form, although finer

Can You Check YES to these five questions?

- ☐ Do the gears you use have surface-hardened teeth?
- ☐ Are the cores tough, ductile, and shock-resistant?
- ☐ Do they always fit perfectly and require no run-in?
- ☐ Are they guaranteed to give maximum service life?
- ☐ Are you completely satisfied with them?

If not, you should use—

PITTSBURGH purple
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ARMORED GEARS are made only by PITTSBURGH GEAR from an exclusive formula perfected by PITTSBURGH engineers. It covers metal, machining, and a method of heat-treating that hardens the wearing surfaces but leaves the core tough, ductile, and shock-resistant.

All PITTSBURGH gears are made to extremely close tolerances to fit perfectly right from the start. They are guaranteed to give you five times the life of untreated gears, one to one and one-half the life of oil-treated gears, and equal or longer life than any other gear in identical service.

You can readily identify **Armored Gears** by their distinctive corrosion preventive coating—"**Pittsburgh Purple.**"

You'll save money if you use PITTSBURGH **Armored Gears.** Send your specifications to us today. We'll quote promptly on one or any quantity of gears you need.

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WORM GEARS
REDUCERS
CRANE WHEELS

PITTSBURGH GEAR COMPANY
27th & Smallman Streets
Pittsburgh 22, Pa.
Phone: ATlantic 1-9950

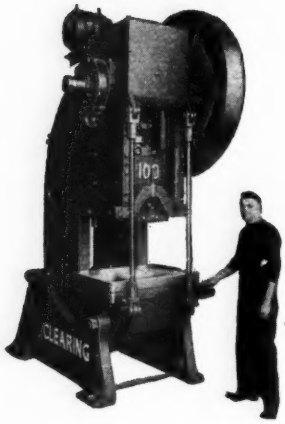
subsidiary of BRAD FOOTE GEAR WORKS, INC. • CICERO 50, ILLINOIS

Jim Carns didn't learn it from his Dad

The Carns hardware store has been on the same corner for eighty years, and Jim is the third generation proprietor. His father died in 1927. Things have changed in the hardware business since then.

Jim's father avoided stamped articles because in his day they were often flimsy and inaccurate—"ten cent store stuff." Today, pressed metal parts can be made strong, rigid, and to close tolerances. They're smooth, light in weight, low in cost—no wonder the public prefers them.

Clearing presses have contributed greatly to this revolution in the manufacture of metal parts. If you are making metal objects by some slower, more costly process, it will pay you to investigate modern press methods. Ask a Clearing engineer to show you possible adaptations to manufacture your product at minimum cost—on a Clearing press.



CLEARING MACHINE CORPORATION
6499 WEST 65th STREET • CHICAGO 38, ILL.
HAMILTON DIVISION, HAMILTON, OHIO

CLEARING PRESSES

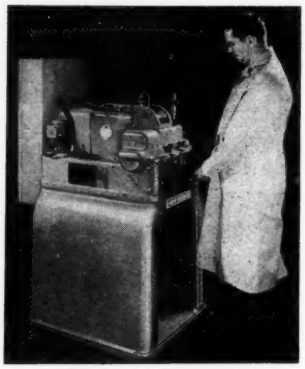
CMC CLEARING

THE WAY TO EFFICIENT MASS PRODUCTION

NEW PRODUCTS and equipment

pitches can be ground in the Whitworth form. The machine takes work up to ½-inch diameter and 4 inches between centers. It employs a multirib wheel.

The lead screw is driven through change gears. Machine can be



equipped with dressing equipment that makes it adaptable for grinding some small, intricate forms. Sheffield Corp., Dept. ST, Dayton 1, O.

USE REPLY CARD—CIRCLE No. 19

Low Differential Flow Meter

. . . measures air, gas flow

Diaflow meter is a low differential flow meter for measuring air flow, gas flow or recording the ratio of air flow to gas flow. It uses dry diaphragm type measuring element and will accommodate static pressures up to 10 pounds and differential pressures up to 20 inches water. Hays Corp., Dept. ST, Michigan City, Ind.

USE REPLY CARD—CIRCLE No. 20

Electronic Trouble Spotter

. . . tracks down friction noises

This portable electronic instrument locates sources of trouble in equipment by tracking down friction noises in such parts as bear-

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Just circle the corresponding number of any item in this section for more information.

INFORMATION

AVAILABLE FOR THE ASKING

71. Castings and Forgings

Miller Mfg. Co.'s facilities for producing steel castings and forgings and other precision manufacturing are briefly described and effectively illustrated in 26-page brochure "Serving Industry." Their special service tools shown will be of interest to readers.

72. Coatings

Detrex Corp.—Plastic coating for paint spray booths and a cleaning and phosphate coating compound are subjects of two new leaflets. One describes use and application of Vincote vinyl coating, a peelable type. Other covers fine-grained phosphate coating applicable to steel parts, both to clean them and to provide a good paint bond.

73. Pipe Fittings

Hollaender Mfg. Co.—Nu-Rail slip-on fittings used in construction of permanent and temporary pipe structures completely eliminate threading and welding, and save on cutting pipe. 8-page bulletin No. 120 illustrates industrial, municipal and commercial applications of these fittings and presents specifications, dimensions and other data.

74. Industrial Tires

Monarch Rubber Co.—In 28 pages, illustrated Monarch catalog and handbook of industrial tires presents much general information on line of industrial tires, plus application data and how to get more ton-miles per tire. Sizes and specs for tires of trucks made by various manufacturers are given.

75. Short-Run Stampings

HPL Mfg. Co.—"Stampings in Small Lots" tells how company's Fast-Tooling process permits the rapid and inexpensive production of small lots of stamped parts for experimental or development work, or other uses where quantity requirements range from 25 to 25,000 pieces. This 4-page illustrated bulletin 718 will be sent on request.

76. Lift Truck Batteries

C & D Batteries, Inc.—Two 4-page bulletins, IT-518 and IT-517, offer full description, illustration and tabulated specifications on Slyver-Clad industrial truck batteries and motorized lift truck batteries.

77. Plate Lifting Clamps

Smith Devices, Inc. — Details on heavy duty clamps for lifting plate vertically and horizontally, lifting structurals and barrels and use as a drag clamp are found in 4-page illustrated bulletin No. 100. Five models have capacities from ½ to 20 tons. Other sheet and plate handling equipment is also covered.

78. Porcelain Enamel

Erie Enameling Co.—What porcelain enamel is and its applications for abrasive services, corrosion protection, handling of sticky, viscous materials, reflectivity and high temperature and thermal shock are described in 16-page folder "Porcelain Enamel to Handle the 'Tough' Jobs." Its physical characteristics are also given.

79. Steel Conveyor Belt

May-Fran Engineering, Inc.—If your plant handles metal scrap, hot forgings, flash, wet or dry metal chips and turnings or other sharp and abrasive materials, you should be interested in the hinged steel conveyor belt described and illustrated in 4-page catalog MF-530. Belt can be assembled in almost any width or length from stocked components.

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12-8-52

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80. Steel Grille Material

Hendrick Mfg. Co.—Sixteen types of Ornametal perforated grille material are illustrated in 4-page folder. Various patterns, offered in 20, 22 and 24-gage cold rolled steel, are available in sheet sizes from 36 x 96 in. to 48 x 120 in. Dimensions and open area percentages are given.

81. Furnace Construction

M. H. Detrick Co.—"Heat Enclosure Methods" is title of manual which discusses origin of the arch, flat suspended arches, sectionally supported walls and design of heat enclosures. Graphs and tables help in the selection of proper type of construction for any heat and operating condition.

82. Maintenance Service

Metalweld, Inc.—Welding, rubber lining, boiler repair, metal spraying, sand blasting, concrete demolition and equipment rental are some of the services offered by this company. All are shown and described in 16-page illustrated bulletin "Maintenance Service."

83. Executive Development

Harold F. Howard Co.—Personality factors in executive development are discussed in 4-page folder 117-13-M. Included is information on basic points of executive development programs, appraisal and selection of executives for development, and personality testing.

84. Protective Coatings

Texasphaltic Co.—Dip that protects canvas, rope and fabrics from acids, alkalis and abrasion is but one protective coating described in 4-page bulletin. Among others are copper preservative for wood and fabric, Tex-A-Linsy paint oil, termite oil, rustproof metallic paint, waterproof plastic cement, roof coating and cork covering compound.

85. Industrial Tapes

Kendall Co., Bauer & Black Div., Polyken Industrial Tape Dept.—68-page illustrated pocket-size "Tape Use Manual" is handbook of industrial tape applications classified by industries and specific jobs. Standard industrial classifications are given.

86. Precision Gages

Moore Products Co.—8-page illustrated bulletin 8005-S deals with installation, operation and maintenance of pneumatic comparator gages. Units use 35-psi air pressure and can be employed to inspect inside and outside diameters, thickness, flatness, taper, contour, center distance and combinations of dimensions accurately to close tolerances.

EDITORIAL REPRINTS:

87. Chromium Plating

Increased life and reduced maintenance of steel mill equipment is being realized with chromium plating. Pieces weighing from 5 to 45 tons are being plated regularly. Process whips corrosion and adds packing life. STEEL reprint "Chromium Plating Pays Off for Steel Mills" will give you the story on the many parts that can be plated.

88. Bench Testing

"Bench Tests Solve Field Problems" is title of STEEL reprint by G. F. Roddewig of GMC's Truck & Coach Div. which describes how a small department can provide a means for evaluating changes in many units cheaply and accurately. Tests run on truck transmission poppet and shift rail assembly, motor driven water pumps, packaging of military truck parts, truck springs and engine timing gears are described.

89. Welding-Forming Machine

Through the joint efforts of Struthers Wells Corp. and Federal Machine & Welder Co., a single machine which forms and welds a wide range of appliance cabinets and liners is now in production. Machine requires only one operator, saves floor space and eliminates need for sizing fixtures. J. Maloney gives the full story in STEEL reprint "Combined Welding and Forming Lower Appliance Costs."

90. New Gaging Aids

Mechanical difficulties of assembling gage block into an effective measuring tool are overcome by new gaging aids. Nucleus of this Micro-Step gaging system is series of gage block holders and end standards. Holders permit setups up to 72 in. long in increments of as little as 0.000025-in. Read all about it in STEEL reprint "Gage Blocks: New System Widens Applications."

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ings, pistons, gears or cams. The instrument spots the exact source of noise with a metal probe which serves as a microphone. Sound impulses are transmitted through an amplifier to headphones.

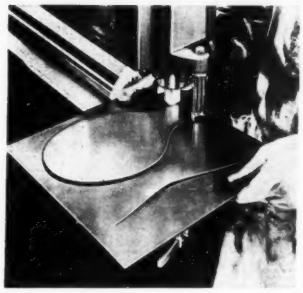
The result is diagnosis of trouble to determine quickly what repairs are needed without tearing down the entire piece of equipment. Anco Instrument Division, American Name Plate & Mfg. Co., Dept. ST, 4254 W. Arthington St., Chicago 24, Ill.

USE REPLY CARD—CIRCLE No. 21

Steel Contour Shear

. . . cuts, beads and forms sheet

Tru-Edge model contour shear, designed for inside cutting, beading and forming sheet steel, employs a shearing principle that eliminates resistance to feeding and cutting the work. Feeding of



material can be started while ram is operating. Inside cutting requires no starting holes, thus eliminating preliminary operations.

Adjustable bottom shearing die is set quickly for various thicknesses of material. Shear cuts from 10 to 36 fpm, depending on gage and material. Capacity reaches 10-gage mild steel and 11-gage stainless. Forty-eight-inch throat depth can be increased by arranging centers outside the throat. Wales-Strippit Corp., Dept. ST, 345 Payne Ave., N. Tonawanda, N. Y.

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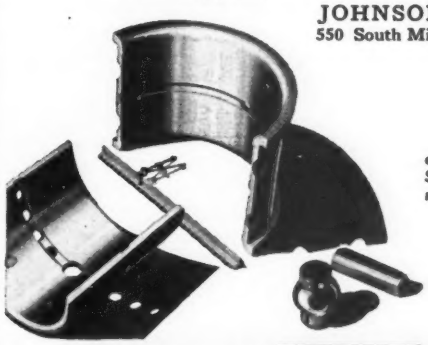
JOHNSON

King Size

BEARINGS ARE PRECISION MADE

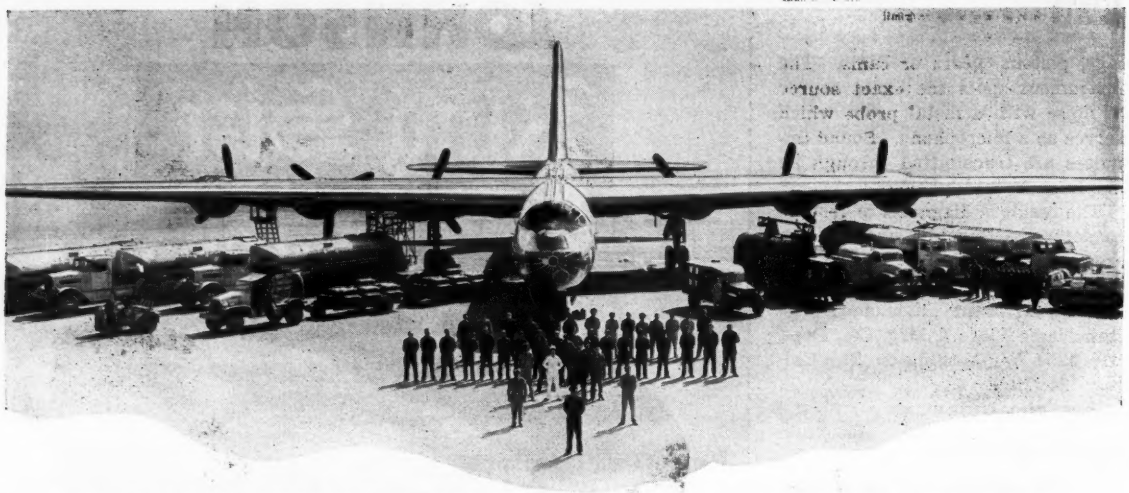
REGARDLESS of size, Johnson Sleeve Bearings are made to precise dimensions required by modern high speed, heavy duty machinery. The Johnson plant is equipped with complete facilities for producing sleeve bearings up to the largest practical size. They are available in cast bronze, cast bronze babbitt-lined, cast steel babbitt-lined, and aluminum alloy . . . with various bronze and aluminum alloys suitable to your service requirements. Johnson engineers will gladly confer with you on "King Size" bearings and assist in designing them to suit the application. Write for an appointment.

JOHNSON BRONZE CO.
550 South Mill St., New Castle, Pa.



No matter how large or small, there is a Johnson Sleeve Bearing to fit your requirements.

JOHNSON JB BEARINGS
Sleeve-Type



COMPLETE INTEGRATION IS YOUR SAFEGUARD, TOO!

When you buy steel, you have the right to expect quality-as-specified. But consider . . . Only *complete integration* of every process—from ore mine to finished product—can assure high grade steel.

Alan Wood processes and plants form a *completely integrated* chain of production. Ore from Alan Wood Steel Company mines is tested in Alan Wood laboratories, smelted in Alan Wood blast furnaces, rolled in Alan Wood rolling mills. And Alan Wood quality control checks on every process—every step of the way!

PRODUCTS OF ALAN WOOD STEEL COMPANY

SPECIALTY PRODUCTS

STAINLESS CLAD STEEL
PERMACLAD stainless Clad Steel combines the surface characteristics of solid stainless with the easy forming qualities of mild carbon steel—provides corrosion resistance at lower cost.

ABRASIVE ROLLED STEEL FLOOR PLATE

A.W. ALGRIP Abrasive Rolled Steel Floor Plate is made by rolling tough abrasive grain as an integral part of the upper portion of steel plate. Result: Positive protection against slipping, even on steep inclines.

ROLLED STEEL FLOOR PLATE
A.W. SUPER-DIAMOND Rolled Steel Floor Plate, made with an allover, engineered pattern of raised, skid-resistant diamonds, is easy to clean, easy to match, and grips without a slip.

IRON PRODUCTS
"Swede" Pig Iron
Foundry, Malleable, Bessemer and Basic

STEEL PRODUCTS
Plates (Sheared)
Tank, Ship, Boiler, Flange and Structural Qualities
Furnished in carbon, copper, or alloy analyses
A.W. Dynalloy
(High Strength Plates)

HOT ROLLED SHEETS
Special qualities in carbon, copper, or alloy analyses
A.W. Dynalloy
(High Strength Sheets)

HOT ROLLED STRIP
Coiled and cut lengths
Carbon, copper, or alloy analyses

A.W. ROLLED STEEL FLOOR PLATES
A.W. Algrip Abrasive
A.W. Super-Diamond Pattern

STAINLESS-CLAD STEEL
Permaclad Sheets and Plates
Standard and special qualities available in desired finishes

A.W. CUT NAILS
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Black, Quenched and Tempered

MINE PRODUCTS
Iron Ore Concentrates, Sintered Concentrates, Crushed Stone, Grit, Sand and Engine Sand

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COAL CHEMICALS
Coke Oven Gas • Crude Coal Tar Ammonium Sulphate • Industrial Benzol, Toluol, Xylol • Motor Benzol • Crude Solvent Naphtha Crude Naphthalene • Crude Tar Bases • Sodium Phenolate • Crude Light Oil Still Residue

ONE CONTROL FROM MINE TO USER

ALAN WOOD STEEL COMPANY

CONSHOHOCKEN, PA.

STEEL SCRAP FIGHTS FOR DEFENSE SELL YOUR SCRAP NOW

Over 125 Years of Iron and Steel Making Experience

IVY ROCK, PA. • SWEDELAND, PA. • DOVER, N.J. • OXFORD, N.J.

The Market Outlook

EXCEPT for yearend lull accompanying the holidays and inventory-taking at many manufacturing plants, there is nothing on the horizon to indicate any substantial easing in demand pressure for the major steel products until well into second quarter, 1953. Some steelmakers think it will be beyond midyear before loosening of supply is experienced. These, however, are the exceptions, the majority withholding their views beyond second quarter pending developments after Jan. 20 when the new Republican administration takes over the reins of government.

UNCERTAINTY—Generally, active consumption of steel through 1953 is foreseen. Steelmaking capacity will attain an imposing figure, somewhere around 120 million tons, during the year, assuring new record output. Still, the outlook with respect to adequacy of supply to meet all consumer requirements promptly is clouded in the uncertainties attending the Korean war, future conduct of the defense program, and government policy with respect to distribution controls.

IFFY PROBLEM—Strong hope prevails that controls will be removed to large extent after the Eisenhower administration takes over. Yet, such action can be reasonably expected only if world political conditions improve markedly, if enlargement of the Korean war is averted, and if further stretchout of the defense program can be safely effected. Continuance of controls until Jan. 20 is a virtual certainty. Last week, Defense Mobilizer Fowler rejected proposals to discontinue existing price, wage and materials controls before the new administration assumes authority. He specifically rejected the steel industry's decontrol plan calling for elimination of the Controlled Materials Plan, except for military and atomic energy requirements, by Apr. 1.

CONSUMPTION—Currently, steel is being consumed in almost as great volume as it is being produced. Consumer stocks are rising ever so slowly and, manufacturing needs seem to be gaining rather than diminishing. Defense needs have not yet attained peak. And virtually every civilian durable goods manufacturing line, with the possible exception of farm equipment, is pushing the mills aggressively for every pound of steel it can get now and in the near future.

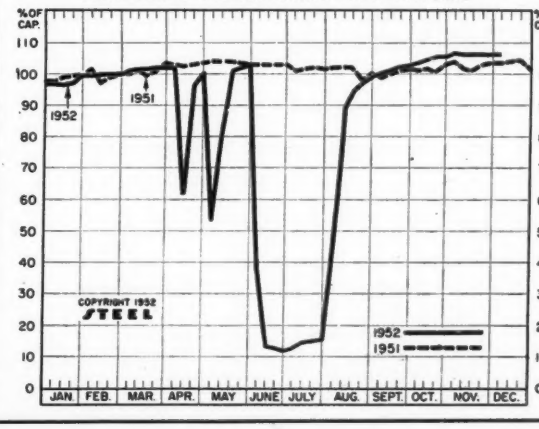
BALANCE—Only a couple weeks back the mills were predicting some degree of demand-supply balance during second quarter. Now, however, many of them are inclined to think balance will be postponed until well along in the last half of the year. They point to the heavy tonnage carryover into first quarter which will take up two-thirds of the period's production. In turn, carryover from first to second quarter promises to be large, with substantial overflow from second to third quarter likely, barring order cancellations.

PRODUCTS PINCHED—Order books in all the major products are loaded for first quarter and there will be little, if any, open rolling time in the period. Scheduling for second quarter is starting. Many mills are booking for the period on a highly selective basis. As things now stand no noteworthy decline in sheet demand is likely soon, with most users badly in need of tonnage. Tubular goods give promise of continuing in tight supply into last half of the year. Producers of hot-rolled carbon bars will have virtually nothing to offer nondefense consumers in the way of new tonnage before March. Structural inquiry is rising and some fabricators can't place first quarter orders with the mills. Virtually all producers of sheared plates are booked full.

PRICES—Revisions in wire product and oven coke prices feature the steel markets at the moment. The wire changes reflect revisions permitted by OPS in approving use of the columnar system in effecting recently announced dollars-and-cents increases.

PRODUCTION—The steel mills have been producing a weekly volume of about 2.2 million tons of ingots since the end of September. Estimated national ingot rate held unchanged last week at 106 per cent, equal to about 2,201,600 tons.

NATIONAL STEELWORKS OPERATIONS



DISTRICT INGOT RATES

Percentage of Capacity Engaged at Leading Production Points

	Week Ended Dec. 6	Change	Same Week 1951	Same Week 1950
Pittsburgh	105	+ 1.5*	100	98
Chicago	109	— 1.5*	107.5	100
Mid-Atlantic	101	0	101.5	100
Youngstown	106	0	106	104
Wheeling	100.5	0	99.5	94
Cleveland	112	— 0.5	106	102
Buffalo	106.5	0	104	104
Birmingham	106.5	0	104	100
New England	92	— 1	92	88
Cincinnati	93	+ 3	102	102
St. Louis	99	+15	93.5	90.5
Detroit	106	— 1*	106	106
Western	107	+ 1	105	102
Estimated national rate	106	0	103.5	101

Based on weekly steelmaking capacity of 2,077,040 tons in 1952; 1,999,034 tons for 1951; 1,928,721 tons for second half, 1950; 1,906,268 tons for first half, 1950.

* Change from revised rate for preceding week.

The Metalworking Outlook—p. 57 Production-Engineering News—p. 93

Composite Market Averages

FINISHED STEEL PRICE INDEX: Bureau of Labor Statistics	Dec. 2 1952	Nov. 25 1952	Month Ago	November Average
(1947-1949=100)	130.5	130.5	130.5	130.5

AVERAGE PRICES (BUREAU OF LABOR STATISTICS)
Week Ended Dec. 2, 1952

Units are 100 lb except where otherwise noted below in parentheses. For complete description of products see insert following p. 28, STEEL, Sept. 8, 1952.

Rails	$3.775	Sheets, C.R. carbon	$5.275
Track spikes	6.650	Sheets, galv.	6.915
Track bolts	9.958	Strip, C.R. carbon	5.100
Tie plates	4.775	Strip, C.R. stainless (lb)	0.325
Joint bars	4.925	Pipe, black, buttweld (100 ft).	7.090
Plates, carbon	4.150	Pipe, galv., buttweld (100 ft).	8.887
Structural shapes	4.200	Boiler tubes (100 ft)	31.663
Bars, tool steel (lb)	1.576	Tin plate (100 lb base box)	8.950
Bars, 3120 alloy	6.575	Terne plate (100 lb base box).	7.750
Bars, stainless (lb)	0.149	Wire, carbon, merchant	6.075
Bars, carbon	4.100	Wire, fence, galv.	6.458
Bars, reinforcing	4.050	Nails (100 lb kegs)	7.390
Bars, C.F. carbon	5.925	Wire, barbed (80 rod spool)	5.920
Sheets, H.R. carbon	4.125	Woven wire fence (20 rod roll)	13.720

FINISHED PRICE INDEX, Weighted: Calculated by STEEL*	Dec. 4 1952	Week Ago	Month Ago	Year Ago	5 Yrs. Ago
Index (1935-39 av.=100)	181.31	181.31	181.31	171.92	129.28
Index in cents per lb	4.912	4.912	4.912	4.657	3.502

ARITHMETICAL PRICE COMPOSITES: Calculated by STEEL*					
Finished Steel NT	$110.98	$110.98	$110.98	$106.32	$76.09
No. 2 Fdry, Pig Iron, GT	55.04	55.04	55.04	52.24	36.89
Basic Pig Iron, GT	54.66	54.66	54.66	52.16	36.42
Malleable Pig Iron, GT	55.77	55.77	55.77	53.27	37.54
Steelmaking Scrap, GT	43.00	43.00	43.00	43.00	40.42

*For explanation of weighted index see STEEL, Sept. 19, 1949, p. 54; of arithmetical price composites, STEEL, Sept. 1, 1952, p. 130.

Comparison of Prices

Comparative prices by districts, in cents per pound except as otherwise noted. Delivered prices based on nearest production point.

FINISHED MATERIALS	Dec. 4 1952	Week Ago	Month Ago	Year Ago	5 Yrs. Ago
Bars, H.R., Pittsburgh	3.95	3.95	3.95	3.70	2.90
Bars, H.R., Chicago	3.95	3.95	3.95	3.70	2.90
Bars, H.R., del. Philadelphia	4.502	4.502	4.502	4.223	3.318
Bars, C.F., Pittsburgh	4.925	4.925	4.925	4.55	3.55
Shapes, Std., Pittsburgh	3.85	3.85	3.85	3.65	2.80
Shapes, Std., Chicago	3.85	3.85	3.85	3.65	2.80
Shapes, del., Philadelphia	4.13	4.13	4.13	3.918	2.954
Plates, Pittsburgh	3.90	3.90	3.90	3.70	2.95
Plates, Chicago	3.90	3.90	3.90	3.70	2.95
Plates, Coatesville, Pa.	4.35	4.35	4.35	4.15	3.15
Plates, Sparrows Point, Md.	3.90	3.90	3.90	3.70	2.95
Plates, Claymont, Del.	4.35	4.35	4.35	4.15	3.15
Sheets, H.R., Pittsburgh	3.775	3.775	3.775	3.60-75	2.80
Sheets, H.R., Chicago	3.775	3.775	3.775	3.60	2.80
Sheets, C.R., Pittsburgh	4.575	4.575	4.575	4.35	3.55
Sheets, C.R., Chicago	4.575	4.575	4.575	4.35	3.55
Sheets, C.R., Detroit	4.775	4.775	4.775	4.55	3.70
Sheets, Galv., Pittsburgh	5.075	5.075	5.075	4.80	3.90
Strip, H.R., Pittsburgh	3.75-4.225	3.75-4.225	3.75-4.225	3.75-4.00	2.80
Strip, H.R., Chicago	3.725	3.725	3.725	3.50	2.80
Strip, C.R., Pittsburgh	5.10-5.80	5.10-5.80	5.10-5.80	4.65-5.35	3.55
Strip, C.R., Chicago	5.35	5.35	5.35	4.90	3.65
Strip, C.R., Detroit	5.30-6.05	5.30-6.05	5.30-6.05	4.85-5.60	3.70
Wire, Basic, Pittsburgh	5.10-5.225	5.10-5.225	5.10-5.225	4.85-5.10	3.675
Nails, Wire, Pittsburgh	6.20-6.35	6.20-6.35	6.20-6.35	5.90-6.20	4.625
Tin plate, box, Pittsburgh	$8.95	$8.95	$8.95	$8.70	$5.75
SEMIFINISHED					
Billets, forging, Pitts. (NT)	$70.50	$70.50	$70.50	$66.00	$56.50
Wire rods, 7/32-⅝", Pitts.	4.425	4.425	4.425	4.10-30	3.05
PIG IRON, Gross Ton					
Bessemer, Pitts.	$55.50	$55.50	$55.50	$53.00	$37.00
Basic Valley	54.50	54.50	54.50	52.00	36.00
Basic, del. Phila.	59.25	59.25	59.25	56.61	38.84
No. 2 Fdry, Pitts.	55.00	55.00	55.00	52.50	36.50
No. 2 Fdry, Chicago	55.00	55.00	55.00	52.50	36.00
No. 2 Fdry, Valley	55.00	55.00	55.00	52.50	36.50
No. 2 Fdry, del. Phila.	59.75	59.75	59.75	57.11	39.34
No. 2 Fdry, Birm.	51.38	51.38	51.38	48.88	34.88
No. 2 Fdry (Birm.) del. Cin.	58.93	58.93	58.93	55.49	38.74
Malleable, Valley	55.00	55.00	55.00	52.50	36.50
Malleable, Chicago	55.00	55.00	55.00	52.50	36.50
Charcoal, Lyles, Tenn.	68.50	68.50	68.50	66.00	50.00
Ferromanganese, Etna, Pa.	228.00	228.00	228.00	188.00	151.00*

*F.o.b. cars, Pittsburgh.

SCRAP, Gross Ton (including broker's commission)					
No. 1 Heavy Melt, Pitts.	$44.00	$44.00	$44.00	$44.00	$40.00
No. 1 Heavy Melt, E. Pa.	41.50	41.50	41.50	42.50	42.50
No. 1 Heavy Melt, Chicago	42.50	42.50	42.50	42.50	38.75
No. 1 Heavy Melt, Valley	44.00	44.00	44.00	44.00	40.00
No. 1 Heavy Melt, Cleve.	43.00	43.00	43.00	43.00	39.75
No. 1 Heavy Melt, Buffalo	43.00	43.00	43.00	43.00	42.50
Rails, Rerolling, Chicago	52.50	52.50	52.50	52.50	56.50
No. 1 Cast, Chicago	50.00	50.00	50.00	49.00†	49.00

† F.o.b. shipping point.

COKE, Net Ton					
Beehive, Furn. Connlsvl.	$14.75	$14.75	$14.75	$14.75	$12.00-12.50
Beehive, Fdry, Connlsvl.	17.00	17.00	17.00	17.50	14.00-15.00
Oven Fdry, Chicago	24.50	24.50	23.00	23.00	17.60

PIG IRON

F.o.b. furnace prices quoted under GCPR as reported to STEEL. Minimum delivered prices are approximate and do not include 3% federal tax. Key to producing companies published on second following page.

PIG IRON, Gross Ton	Basic	No. 2 Foundry	Malleable	Bessemer
Bethlehem, Pa. B2	$56.50	$57.00	$57.50	$58.00
NewYork, del.	....	60.78	61.28	....
Newark, del.	59.52	60.02	60.52	61.02
Philadelphia, del.	59.25	59.75	60.25	60.75
Birmingham District				
AlabamaCity, Ala. R2	50.88	51.38	....	....
Birmingham R2	50.88	51.38	....	....
Birmingham S9	....	51.38	....	....
Woodward, Ala. W15	50.88	51.38	....	....
Cincinnati, del.	....	58.93	....	....
Buffalo District				
Buffalo R2	54.50	55.00	55.50	....
Buffalo H1	54.50	55.00	55.50	....
Tonawanda, N.Y. W12	54.50	55.00	55.50	....
No. Tonawanda, N.Y. T9	....	55.00	55.50	....
Boston, del.	65.15	65.65	66.15	....
Rochester, N.Y. del.	57.52	58.02	58.52	....
Syracuse, N.Y. del.	58.62	59.12	59.62	....
Chicago District				
Chicago 1-3	54.50	55.00	55.00	55.50
Gary, Ind. U5	54.50	....	55.00	....
IndianaHarbor, Ind. I-2	54.50	....	55.00	....
So. Chicago, Ill. W14	54.50	55.00	55.00	....
So. Chicago, Ill. Y1	54.50	55.00	55.00	....
So. Chicago, Ill. U5	54.50	....	55.00	55.50
Milwaukee del.	56.67	57.17	57.17	57.67
Muskegon, Mich. del.	....	61.30	61.30	....
Cleveland District				
Cleveland A7	54.50	55.00	55.00	55.50
Cleveland R2	54.50	55.00	55.00	....
Akron, O., del. from Cleve.	57.11	57.61	57.61	58.11
Lorain, O. N3	54.50	....	....	55.50
Duluth I-3	....	....	55.00	....
Erie, Pa. I-3	54.50	55.00	55.00	55.50
Everett, Mass. E1	....	59.25	59.75	....
Fontana, Calif. K1	60.50	61.00	....	....
GraniteCity, Ill. G4	56.40	56.90	57.40	....
St. Louis, del. (inc. tax)	57.15	57.65	58.15	....
Ironton, Utah C11	54.50	55.00	....	....
Geneva, Utah C11	54.50	55.00	....	....
LoneStar, Tex. L6	50.50	*51.00	51.00	....
Minnequa, Colo. C10	56.50	57.50	57.50	....
Rockwood, Tenn. T3	....	....	58.50	....
Pittsburgh District				
NevilleIsland, Pa. P6	....	55.00	55.00	55.50
Pitts., N.&S. sides, Ambridge				
Aliquippa, del.	....	56.37	56.37	56.87
McKeesRocks, del.	....	56.04	56.04	56.54
Lawrenceville, Homestead, Wilmerding, Monaca, del.	....	56.66	56.66	57.16
Verona, Trafford, del.	....	57.19	57.19	57.69
Brackenridge, del.	....	57.45	57.45	57.95
Bessemer, Pa. U5	54.50	....	55.00	55.50
Clairton, Rankin, So. Duquesne, Pa. U5	54.50	....	....	....
McKeesport, Pa. N3	54.50	....	....	55.50
Monessen, Pa. P7	56.50	....	....	....
Sharpsville, Pa. S6	....	....	55.00	55.50
Steelton, Pa. B2	56.50	57.00	57.50	58.00
Swedeland, Pa. A3	58.50	59.00	59.50	60.00
Toledo, O. I-3	54.50	55.00	55.00	55.50
Cincinnati, del.	59.97	60.47	....	....
Troy, N.Y. R2	56.50	57.00	57.50	58.00
Youngstown District				
Hubbard, O. Y1	54.50	55.00	55.00	....
Youngstown Y1	54.50	55.00	55.00	....
Youngstown U5	54.50	....	....	55.50
Mansfield, O., del.	59.15	59.65	59.65	60.15

* Low phos, southern grade.

PIG IRON DIFFERENTIAL

Silicon: Add 50 cents per ton for each 0.25% Si or percentage thereof over base grade, 1.75-2.25%, except on low phos iron on which base is 1.75-2.00%

Phosphorus: Deduct 38 cents per ton for P content of 0.70% and over.

Manganese: Add 50 cents per ton for each 0.50% manganese over 1% or portion thereof.

Nickel: Under 0.50% no extra; 0.50-0.74%, incl., add $2 per ton and each additional 0.25%, add $1 per ton.

BLAST FURNACE SILVERY PIG IRON, Gross Ton (Base 6.0-6.50% silicon; add $1.50 for each 0.5% Si)	
Jackson, O. G2, J1	$65.50
Buffalo H1	66.75

ELECTRIC FURNACE SILVERY PIG IRON, Gross Ton (Base 14.01-14.50% silicon; add $1 for each 0.5% Si to 18%; $1 for each 0.5% Mn over 1%; $2 per gross ton premium for 0.045% max P)	
NiagaraFalls, N.Y. P15	$91.00
Keokuk, Iowa, Openhearth & Fdry, frt. allowed K2	92.50
Keokuk, OH & Fdry., 12½ lb piglets, 16% Si, frt. allowed K2	95.50
Wenatchee, Wash., OH & Fdry., frt. allowed K2	92.50

CHARCOAL PIG IRON, Gross Ton (Low phos semi-cold blast; differential charged for silicon over base grade; also for hard chilling iron Nos. 5 & 6)	
Lyles, Tenn. T3	$68.50

LOW PHOSPHORUS PIG IRON, Gross Ton	
Cleveland, intermediate, A7	$59.50
Steelton, Pa. B2	62.50
Philadelphia, delivered	66.05
Troy, N.Y. R2	62.50

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Semifinished and Finished Steel Products

Mill prices quoted under GCPR as reported to STEEL, Dec. 4, 1952, cents per pound except as otherwise noted. Changes shown in italics Code numbers following mill points indicate producing company; key on next two pages.

INGOTS, Carbon, Forging (NT)
Fontana,Calif. K1 ....$81.00
Munhall,Pa. U5 .....54.00
Seattle S24 .....75.00

INGOTS, Alloy (NT)
Detroit R7 .....$57.00
Fontana,Calif. K1 ....83.00
Houston S5 .....65.00
Midland,Pa. C18 .....57.00
Munhall,Pa. U5 .....57.00

BILLETS, BLOOMS & SLABS
Carbon, Rerolling (NT)
Bessemer,Pa. U5 ....$59.00
Clairton,Pa. U5 .....59.00
Ensley,Ala. T2 .....59.00
Fairfield,Ala. T2 .....59.00
Fontana,Calif. K1 ....78.00
Gary,Ind. U5 .....59.00
Johnstown,Pa. B2 .....59.00
Lackawanna,N.Y. B2 ..59.00
Munhall,Pa. U5 .....59.00
So.Chicago,Ill. U5 .....59.00
So.Duquesne,Pa. U5 ...59.00
Carbon, Forging (NT)
Bessemer,Pa. U5 ....$70.50
Buffalo R2 .....70.50
Canton,O. R2 .....70.50
Clairton,Pa. U5 .....70.50
Cleveland R2 .....70.50
Conshohocken,Pa. A3 ..77.50
Detroit R7 .....73.50
Ensley,Ala. T2 .....70.50
Fairfield,Ala. T2 .....70.50
Fontana,Calif. K1 ....89.50
Gary,Ind. U5 .....70.50
Geneva,Utah C11 .....70.50
Houston S5 .....78.50
Johnstown,Pa. B2 .....70.50
Lackawanna,N.Y. B2 ..70.50
LosAngeles B3 .....89.50
Munhall,Pa. U5 .....70.50
Seattle B3 .....89.50
So.Chicago R2,U5,W14.70.50
So.Duquesne,Pa. U5 ...70.50
So.SanFrancisco B3 ...89.50
Alloy, Forging (NT)
Bethlehem,Pa. B2 ....$76.00
Buffalo R2 .....76.00
Canton,O. R2 .....76.00
Canton,O. T7 .....78.60
Conshohocken,Pa. A3 ..83.00
Detroit R7 .....79.00
Fontana,Calif. K1 ....95.00
Gary,Ind. U5 .....76.00
Houston S5 .....84.00
Ind.Harbor,Ind. Y1 ....76.00
Johnstown,Pa. B2 .....76.00
Lackawanna,N.Y. B2 ..76.00
LosAngeles B3 .....96.00
Massillon,O. R2 .....76.00
Midland,Pa. C18 .....76.00
Munhall,Pa. U5 .....76.00
So.Chicago R2,U5,W14.76.00
So.Duquesne,Pa. U5 ...76.00
Struthers,O. Y1 .....76.00
Warren,O. C17 .....76.00

ROUNDS, SEAMLESS TUBE (NT)
Buffalo R2 .....$87.50
Canton,O. R2 .....87.50
Cleveland R2 .....87.50
Fontana,Calif. K1 ....108.50
Gary,Ind. U5 .....87.50
Massillon,O. R2 .....87.50
So.Chicago,Ill. R2 ....87.50
So.Duquesne,Pa. U5 ...87.50

SHEET BARS (NT)
Fontana,Calif. K1(43) .$89.00

SKELP
Aliquippa,Pa. J5 .....$3.65
Munhall,Pa. U5 .....3.55
Warren,O. R2 .....3.55
Youngstown R2, U5 ....3.55

WIRE RODS
Alton,Ill. L1 .....4.70
AlabamaCity,Ala. R2 ..4.325
Buffalo W12 .....4.325
Cleveland A7 .....4.325
Donora,Pa. A7 .....4.325
Fairfield,Ala. T2 .....4.325
Fontana,Calif. K1 ....5.125
Houston S5 .....4.725
Johnstown,Pa. B2 .....4.325
Joliet,Ill. A7 .....4.325
KansasCity,Mo. S5 ....4.665
LosAngeles B3 .....5.125
Minnequa,Colo. C10 ....4.575
Monessen,Pa. P7 .....4.525
No.Tonawanda,N.Y.B11 4.325
Pittsburg,Calif. C11 ..4.975
Portsmouth,O. P12 ....4.525
Roebling,N.J. R5 .....4.425
So.Chicago,Ill. R2 ....4.325
SparrowsPoint,Md. B2..4.425
Sterling,Ill.(1) N15 ....4.325
Struthers,O. Y1 .....4.325
Torrance,Calif. C11 ....5.125
Worcester,Mass. A7 ....4.625

SHEET STEEL PILING
Ind.Harbor,Ind. I-2 ...4.675
Lackawanna,N.Y. B2 ..4.675
Munhall,Pa. U5 .....4.675
So.Chicago,Ill. U5 ....4.675

STRUCTURALS
Carbon Steel Stand. Shapes
AlabamaCity,Ala. R2 ..3.85
Aliquippa,Pa. J5 .....3.85
Bessemer,Ala. T2 .....3.85
Bethlehem,Pa. B2 .....3.90
Clairton,Pa. U5 .....3.85
Fairfield,Ala. T2 .....3.85
Fontana,Calif. K1 .....4.45
Gary,Ind. U5 .....3.85
Geneva,Utah C11 .....3.85
Houston S5 .....4.25
Ind.Harbor,Ind. I-2 ...3.85
Johnstown,Pa. B2 .....3.90
KansasCity,Mo. S5 ....4.45
Lackawanna,N.Y. B2 ..3.90
LosAngeles B3 .....4.45
Minnequa,Colo. C10 ....4.30
Munhall,Pa. U5 .....3.85
Niles,Calif.(22) P1 ....4.56
Phoenixville,Pa. P4 ....6.10
Seattle B3 .....4.50
So.Chicago,Ill. U5, W14.3.85
So.SanFrrancisco B3 ....4.40
Torrance,Calif. C11 ....4.45
Weirton,W.Va. W6 .....4.10
Wide Flange
Bethlehem,Pa. B2 .....3.90
Clairton,Pa. U5 .....3.85
Fontana,Calif. K1 .....4.85
Johnstown,Pa. B2 .....3.90
Lackawanna,N.Y. B2 ..3.90
Munhall,Pa. U5 .....3.85
So.Chicago,Ill. U5 .....3.85
Alloy Stand. Shapes
Clairton,Pa. U5 .....4.725
Fontana,Calif. K1 .....5.925
Gary,Ind. U5 .....4.725
Munhall,Pa. U5 .....4.725
So.Chicago,Ill. U5 ....4.725
H.S., L.A. Stand. Shapes
Aliquippa,Pa. J5 .....5.80
Bessemer,Ala. T2 .....5.80
Bethlehem,Pa. B2 .....5.80
Clairton,Pa. U5 .....5.80
Fairfield,Ala. T2 .....5.80
Fontana,Calif. K1 .....6.40
Gary,Ind. U5 .....5.80
Geneva,Utah C11 .....5.80
Ind.Harbor,Ind. I-2 ...5.80
Ind.Harbor,Ind. Y1 ....6.30
Johnstown,Pa. B2 .....5.80
Lackawanna,N.Y. B2 ..5.80
LosAngeles B3 .....6.35
Munhall,Pa. U5 .....5.80
Seattle B3 .....6.40
So.Chicago,Ill. U5 .....5.80
So.SanFrancisco B3 ....6.30
Struthers,O. Y1 .....6.30
H.S., L.A. Wide Flange
Aliquippa,Pa. J5 .....5.50
Bethlehem,Pa. B2 .....5.80
Lackawanna,N.Y. B2 ..5.80
Munhall,Pa. U5 .....5.75
So.Chicago,Ill. U5 .....5.75
BEARING PILES
Munhall,Pa. U5 .....3.85
So.Chicago,Ill. U5 .....3.85

PLATES,High-Strength Low-Alloy
Aliquippa,Pa. J5 .....5.95
Bessemer,Ala. T2 .....5.95
Clairton,Pa. U5 .....5.95
Cleveland J5, R2 .....5.95
Conshohocken,Pa. A3 ...6.20
Ecorse,Mich. G5 .....6.90
Fairfield,Ala. T2 .....5.95
Fontana,Calif.(30) K1 ..6.55
Gary,Ind. U5 .....5.95
Geneva,Utah C11 .....5.95
Ind.Harbor,Ind. I-2 ....5.95
Ind.Harbor,Ind. Y1 ....6.45
Johnstown,Pa. B2 .....5.95
Munhall,Pa. U5 .....5.95
Pittsburgh J5 .....5.95
Seattle B3 .....6.85
Sharon,Pa. S3 .....5.95
So.Chicago,Ill. U5 .....5.95
SparrowsPoint,Md. B2 ..5.95
Warren,O. R2 .....5.95
Youngstown Y1 .....6.45
Youngstown U5 .....5.95

PLATES, Open-Hearth Alloy
Claymont,Del. C22 .....5.35
Coatesville,Pa. L7 .....5.75
Conshohocken,Pa. A3 ..5.55
Fontana,Calif. K1 .....6.20
Gary,Ind. U5 .....5.25
Johnstown,Pa. B2 .....5.25
Munhall,Pa. U5 .....5.25
Sharon,Pa. S3 .....5.70
So.Chicago,Ill. U5 .....5.25
SparrowsPoint,Md. B2 ..5.25

FLOOR PLATES
Cleveland J5 .....4.95
Conshohocken,Pa. A3 ..4.95
Ind.Harbor,Ind. I-2 ....4.95
Munhall,Pa. U5 .....4.95
So.Chicago,Ill. U5 .....4.95

PLATES, Ingot Iron
Ashland,c.l. (15) A10...4.15
Cleveland,c.l. R2 .....4.50
Warren,O., c.l. R2 .....4.50

PLATES, Carbon Steel
AlabamaCity,Ala. R2 ..3.90
Aliquippa,Pa. J5 .....3.90
Ashland,Ky. (15) A10...3.90
Bessemer,Ala. T2 .....3.90
Clairton,Pa. U5 .....3.90
Claymont,Del. C22 .....4.35
Cleveland J5, R2 .....3.90
Coatesville,Pa. L7 .....4.35
Conshohocken,Pa. A3 ..4.35
Ecorse,Mich. G5 .....4.45
Fairfield,Ala. T2 .....3.90
Fontana,Calif.(30) K1 ..4.50
Gary,Ind. U5 .....3.90
GraniteCity,Ill. G4 .....4.60
Geneva,Utah C11 .....3.90
Harrisburg,Pa. C5 .....6.50
Houston S5 .....4.30
Ind.Harbor,Ind. I-2, Y1.3.90
Johnstown,Pa. B2 .....3.90
Lackawanna,N.Y. B2 ..3.90
Minnequa,Colo. C10 ....4.70
Munhall,Pa. U5 .....3.90
Pittsburgh J5 .....3.90
Seattle B3 .....4.80
Sharon,Pa. S3 .....4.15
So.Chicago,Ill. U5, W14.3.90
SparrowsPoint,Md. B2 ..3.90
Steubenville,O. W10 ....3.90
Warren,O. R2 .....3.90
Weirton,W.Va. W6 .....4.20
Youngstown R2, U5, Y1.3.90

PLATES, Carbon A.R.
Fontana,Calif. K1 .....5.65
Geneva,Utah C11 .....5.05

PLATES, Wrought Iron
(Add 4.7% to base and extras)
Economy,Pa.B14 .....8.60

BARS, Hot-Rolled Carbon
AlabamaCity,Ala. R2....3.95
Aliquippa,Pa. J5 .....3.95
Alton,Ill. L1 .....4.50
Atlanta,Ga. A11 .....4.50
Bessemer,Ala. T2 .....3.95
Buffalo R2 .....3.95
Canton,O. R2 .....3.95
Clairton,Pa. U5 .....3.95
Cleveland R2 .....3.95
Detroit R7 .....4.10
Ecorse,Mich. G5 .....4.30
Emeryville,Calif. J7 ....4.70
Fairfield,Ala. T2 .....3.95
Fontana,Calif. K1 .....4.65
Gary,Ind. U5 .....3.95
Houston S5 .....4.35
Ind.Harbor,Ind. I-2 Y1..3.95
Johnstown,Pa. B2 .....3.95
Kansas City,Mo. S5 .....4.55
Lackawanna,N.Y. B2 ..3.95
LosAngeles B3 .....4.65
Milton,Pa. B6 .....4.55
Minnequa,Colo. C10 ....4.40
Niles,Calif. P1 .....4.65
N.Tonawanda,N.Y. B11.3.95
Pittsburg,Calif. C11 ....4.65
Pittsburgh J5 .....3.95
Seattle B3, N14 .....4.70
So.Chicago R2,U5,W14 ..3.95
So.Duquesne,Pa. U5 ....3.95
So.SanFran.,Cal. B3 ....4.70
Sterling,Ill. N15 .....4.55
Struthers,O. Y1 .....3.95
Torrance,Calif. C11 ....4.65
Weirton,W.Va. W6 .....4.10
Youngstown R2, U5 ....3.95

BAR SIZE ANGLES; S. Shapes
Aliquippa,Pa. J5 .....3.95
Atlanta A11 .....4.50
Niles,Calif. P1 .....4.65
SanFrancisco S7 .....5.00

BAR SIZE ANGLES; H.R.CARBON
Bethlehem,Pa. B2 .....4.15

BARS, Hot-Rolled Alloy
Bethlehem,Pa. B2 .....4.675
Buffalo R2 .....4.675
Canton,O. R2 .....4.675
Canton,O. T7 .....4.72
Clairton,Pa. U5 .....4.675
Detroit R7 .....4.825
Ecorse,Mich. G5 .....5.025
Fontana,Calif. K1 .....5.725
Gary,Ind. U5 .....4.675
Houston S5 .....5.075
Ind.Harbor,Ind. I-2, Y1.4.675
Johnstown,Pa. B2 .....4.675
KansasCity,Mo. S5 .....5.275
Lackawanna,N.Y. B2 ..4.675
LosAngeles B3 .....5.725
Massillon,O. R2 .....4.675
Midland,Pa. C18 .....4.30
So.Chicago R2,U5,W14 .4.675
So.Duquesne,Pa. U5 ....4.675
Struthers,O. Y1 .....4.675
Warren,O. C17 .....4.675
Youngstown U5 .....4.675

BAR SHAPES, Hot-Rolled Alloy
Clairton,Pa. U5 .....4.925
Gary,Ind. U5 .....4.925
Youngstown U5 .....4.925

BARS & SMALL SHAPES, H. R., High-Strength Low-Alloy
Aliquippa,Pa. J5 .....5.925
Bessemer,Ala. T2 .....5.925
Bethlehem,Pa. B2 .....5.925
Clairton,Pa. U5 .....5.925
Cleveland R2 .....5.925
Ecorse,Mich. G5 .....6.675
Fairfield,Ala. T2 .....5.925
Fontana,Calif. K1 ....6.975
Gary,Ind. U5 .....5.925
Ind.Harbor,Ind. I-2 ...5.925
IndianaHarbor,Ind. Y1.6.425
Johnstown,Pa. B2 .....5.925
Lackawanna,N.Y. B2 ..5.925
LosAngeles B3 .....6.625
Pittsburgh J5 .....5.925
Seattle B3 .....6.675
So.Duquesne,Pa. U5 ...5.925
So.SanFrancisco B3 ....6.675
Struthers,O. Y1 .....6.425
Youngstown U5 .....5.925

BARS, Cold-Finished Carbon
Ambridge,Pa. W18 ....4.925
BeaverFalls,Pa. R2 ....4.925
BeaverFalls,Pa. M12 ..4.925
Buffalo B5 .....4.975
Camden,N.J. P13 .....5.375
Carnegie,Pa. C12 .....4.925
Chicago B5 .....4.925
Chicago W18 .....4.925
Cleveland A7, C20 ....4.925
Detroit P17, R7 .....5.075
Donora,Pa. A7 .....4.925
Elyria,O. W8 .....4.925
FranklinPark,Ill. N5 ..4.925
Gary,Ind. R2 .....4.925
GreenBay,Wis. F7 .....4.925
Hammond,Ind. L2, M13..4.925
Hartford,Conn. R2 .....5.475
LosAngeles R2 .....6.375
Mansfield,Mass. B5 .....5.475
Massillon,O. R2, R8....4.925
Monaca,Pa. S17 .....4.925
Newark,N.J. W18 .....5.375
Plymouth,Mich. P5 .....5.175
Pittsburgh J5 .....4.925
Putnam,Conn. W18 .....5.475
Readville,Mass. C14 ....5.475
St.Louis,Mo. M5 .....5.30
So.Chicago,Ill. W14 ....4.925
SpringCity,Pa. K3 .....5.375
Struthers,O. Y1 .....4.925
Waukegan,Ill. A7 .....4.925
Youngstown Y1 .....4.925
Youngstown F3 .....4.925

BARS, Cold-Finished Alloy
Ambridge,Pa. W18 .....6.00
BeaverFalls,Pa. M12 ....6.00
Bethlehem,Pa. B2 .....6.00
Buffalo B5 .....6.00
Camden,N.J. P13 .....6.40
Canton,O. R2 .....6.00
Canton,O. T7 .....5.99
Carnegie,Pa. C12 .....6.00
Chicago B5 .....6.00
Chicago W18 .....6.00
Cleveland A7 .....6.05
Cleveland C20 .....6.00
Detroit P17, R7 .....6.15
Donora,Pa. A7 .....6.05
Elyria,O. W8 .....6.00
Gary,Ind. R2 .....6.00
Hammond,Ind. L2, M13.6.00
Hartford,Conn. R2 .....6.45
Lackawanna,N.Y. B2 ..6.00
Mansfield,Mass. B5 ....6.45
Massillon,O. R2, R8....6.00
Midland,Pa. C18 .....5.40
Monaca,Pa. S17 .....6.00
Newark,N.J. W18 .....6.35
Plymouth,Mich. P5 .....6.20
So.Chicago,Ill. R2, W14.6.00
SpringCity,Pa. K3 .....6.20
Struthers,O. Y1 .....6.00
Warren,O. C17 .....6.00
Waukegan,Ill. A7 .....6.05
Worcester,Mass. A7 ....6.35
Youngstown Y1 .....6.00
Youngstown F3 .....6.00

BARS, Reinforcing (Fabricators)
AlabamaCity,Ala. R2 ...3.95
Atlanta A11 .....4.50
Buffalo R2 .....3.95
Cleveland R2 .....3.95
Emeryville,Calif. J7 ....4.70
Fairfield,Ala. T2 .....3.95
Fontana,Calif. K1 .....4.65
Gary,Ind. U5 .....3.95
Houston S5 .....4.35
Ind.Harbor,Ind. I-2, Y1.3.95
Johnstown,Pa. B2 .....3.95
Kansas City,Mo. S5 .....4.55
Lackawanna,N.Y. B2 ..3.95
LosAngeles B3 .....4.65
Milton,Pa. B6 .....4.55
Minnequa,Colo. C10 ....4.75
Niles,Calif. P1 .....4.65
Pittsburg,Calif. C11 ....4.65
Pittsburgh J5 .....3.95
SandSprings,Okla. S5 ...4.85
Seattle B3, N14 .....4.70
So.Chicago,Ill. R2 .....3.95
So.Duquesne,Pa. U5 ....3.95
So.SanFrancisco B3 ....4.70
SparrowsPoint,Md. B2 ..3.95
Sterling,Ill.(1) N15 ....4.70
Struthers,O. Y1 .....3.95
Torrance,Calif. C11 ....4.65
Youngstown R2, U5 ....3.95

BARS, Reinforcing
(Fabricated; to consumers)
Huntington,W.Va. W7 ..5.50
Johnstown, ¼-1" B2 ...4.75
LosAngeles B3 .....5.45
Marion,O. P11 .....5.25
Seattle B3, N14 .....5.80
So.SanFrancisco B3 ....5.45
Sparrow Pt. ¼-1" B2 ...4.75
Williamsport,Pa. S19 ...5.35

RAIL STEEL BARS
ChicagoHts.(3,4) C2 ...5.00
ChicagoHts.(3,4) I-2 ...4.75
Franklin,Pa.(3,4) F5 ...5.00
FortWorth,Tex.(26) T4..5.10
Huntngt,W.Va.(3) W7 ...5.75
Marion,O.(3) P11 .....4.75
Moline,Ill.(3) R2 .....4.05
Tonawanda(3,4) B12 ....5.00
Williamsport(3) S19 ....5.25
Williamsport(4) S19 ....5.35

BARS, Wrought Iron
(Add 4.7% to base and extras)
Economy,Pa.(S.R.) B14.9.60
Economy,Pa.(D.R.)B14 11.90
Economy(Staybolt)B14 12.20
McK.Rks.(Staybolt)L5. 14.50
McK.Rks.(S.R.) L5 ....9.60
McK.Rks.(D.R.) L5 ....13.00

SHEETS, Hot-Rolled Steel
(18 gage and heavier)
AlabamaCity,Ala. R2 ..3.775
Ashland,Ky.(8) A10 ....3.775
Butler,Pa. A10 .....3.775
Cleveland J5, R2 .....3.775
Conshohocken,Pa. A3 ..4.175
Detroit M1 .....4.40
Ecorse,Mich. G5 .....3.975
Fairfield,Ala. T2 .....3.775
Fontana,Calif. K1 .....4.725
Gary,Ind. U5 .....3.775
Geneva,Utah C11 .....3.875
GraniteCity,Ill. G4 ....4.30
Ind.Harbor,Ind. I-2, Y1.3.775
Irvin,Pa. U5 .....3.775
Lackawanna,N.Y. B2 ..3.775
Munhall,Pa. U5 .....3.775
Niles,O. N12 .....5.425
Pittsburg,Calif. C11 ....4.475
Pittsburgh J5 .....3.775
Sharon,Pa. S3 .....4.175
So.Chicago,Ill. W14 ....3.775
SparrowsPoint,Md. B2..3.775
Steubenville,O. W10 ....3.775
Torrance,Calif. C11 ....4.475
Warren,O. R2 .....3.775
Weirton,W.Va. W6 .....3.775
WestLeechburg,Pa. A4.3.925
Youngstown U5, Y1....3.775

SHEETS, H.R. (19 gage)
AlabamaCity,Ala. R2 ..4.925
Dover,O. R1 .....5.825
Mansfield,O. E6 .....5.65
Niles,O. N12 .....5.675
Torrance,Calif. C11 ....5.575

SHEETS, H.R. (14 ga. heavier)
High-Strength Low-Alloy
Cleveland J5, R2 .....5.675
Conshohocken,Pa. A3 ..5.925
Ecorse,Mich. G5 .....6.225
Fairfield,Ala. T2 .....5.675
Fontana,Calif. K1 .....6.625
Gary,Ind. U5 .....5.675
Ind.Harbor,Ind. I-2 ....5.675
Ind.Harbor,Ind. Y1 ....6.175
Irvin,Pa. U5 .....5.675
Lackawanna(35) B2 ....5.675
Munhall U5 .....5.675
Pittsburgh J5 .....5.675
Sharon,Pa. S3 .....5.675
So.Chicago,Ill. U5 .....5.675
SparrowsPoint(36) B2..5.675
Warren,O. R2 .....5.675
Weirton,W.Va. W6 .....6.025
Youngstown U5 .....5.675
Youngstown Y1 .....6.175

SHEETS, Cold-Rolled
High-Strength Low-Alloy
Cleveland J5, R2 .....6.925
Ecorse,Mich. G5 .....7.475
Fontana,Calif. K1 .....7.875
Gary,Ind. U5 .....6.925
IndianaHarbor,Ind. Y1.7.425
IndianaHarbor,Ind. I-2.6.925
Irvin,Pa. U5 .....6.925
Lackawanna(37) B2 ....6.925
Pittsburgh J5 .....6.925
SparrowsPoint(38) B2..6.925
Warren,O. R2 .....6.925
Weirton,W.Va. W6 .....7.275
Youngstown Y1 .....7.425

SHEETS, Cold-Rolled Steel (Commercial Quality)

Butler,Pa. A10	4.575
Cleveland J5, R2	4.575
Ecorse,Mich. G5	4.775
Fairfield,Ala. T2	4.575
Follansbee,W.Va. F4	5.575
Fontana,Calif. K1	5.525
Gary,Ind. U5	4.575
GraniteCity,Ill. G4	5.275
Ind.Harbor,Ind. I-2,Y1	4.575
Irvin,Pa. U5	4.575
Lackawanna,N.Y. B2	4.575
Middletown,O. A10	4.575
Pittsburg,Calif. C11	5.525
Pittsburgh J5	4.575
SparrowsPoint,Md. B2	4.575
Steubenville,O. W10	4.575
Warren,O. R2	4.575
Weirton,W.Va. W6	5.775
WestLeechburg,Pa. A4	5.45
Youngstown Y1	4.575

SHEETS, Galv'd No. 10 Steel

AlabamaCity,Ala. R2	5.075
Ashland,Ky.(8) A10	5.075
Canton,O. R2	5.075
Delphos,O. N16	5.675
Dover,O. R1	5.775
Fairfield,Ala. T2	5.075
Gary,Ind. U5	5.075
GraniteCity,Ill. G4	5.50
Ind.Harbor,Ind. I-2	5.075
Irvin,Pa. U5	5.075
Kokomo,Ind.(13) C16	5.475
MartinsFerry,O. W10	5.075
Niles,O. N12	6.275
Pittsburg,Calif. C11	5.825
SparrowsPoint,Md. B2	5.075
Steubenville,O. W10	5.075
Torrance,Calif. C11	5.825
Weirton,W.Va. W6	5.075

SHEETS, Galvanized No. 10, High-Strength Low-Alloy

Irvin,Pa. U5	7.625
SparrowsPoint(39) B2	7.775

SHEETS, Galvannealed Steel

Canton,O. R2	5.625
Irvin,Pa. U5	5.625
Kokomo,Ind.(13) C16	6.025
Niles,O. N12	6.825

SHEETS, ZINCGRIP Steel No. 10

Butler,Pa. A10	5.325
Middletown,O. A10	5.325

SHEETS, Electro Galvanized

Cleveland R2 (28)	5.925
Niles,O. R2 (28)	5.925
Weirton,W.Va. W6	5.775

SHEETS, Well Casing

Fontana,Calif. K1 (43)	5.10
Torrance,Calif. C11	5.275

BLUED Stock, 29 ga.

Yorkville,O. W10	7.00
Follansbee,W.Va. F4	7.10
Follansbee (23) F4	6.425

SHEETS, Enameling Iron

Ashland,Ky.(8) A10	4.925
Cleveland R2	4.925
Gary,Ind. U5	4.925
GraniteCity,Ill. G4	5.625
Ind.Harbor,Ind. I-2	4.925
Irvin,Pa. U5	4.925
Middletown,O. A10	4.925
Youngstown Y1	4.925

BLACK PLATE (Base Box)

Aliquippa,Pa. J5	$6.25
Fairfield,Ala. T2	6.60
Gary,Ind. U5	6.50
GraniteCity,Ill. G4	6.70
Ind.Harbor,Ind. I-2, Y1	6.50
Irvin,Pa. U5	6.50
Niles,O. R2	6.50
Pittsburg,Calif. C11	7.25
SparrowsPoint,Md. B2	6.60
Warren,O. R2	6.50
Weirton,W.Va. W6	6.50
Yorkville,O. W10	6.50

HOLLOWARE ENAMELING Black Plate (29 gage)

Follansbee,W.Va. F4	6.10
Gary,Ind. U5	6.10
GraniteCity,Ill. G4	6.30
Ind.Harbor,Ind. Y1	6.10
Irvin,Pa. U5	6.10
Yorkville,O. W10	6.35

SHEETS, Culvert No. 16

	Cu	Cu
	Alloy	Fe
Ashland,Ky. A10	5.875	....
Canton,O. R2	5.925	6.375
Fairfield,Ala. T2	5.875	6.125
Gary,Ind. U5	5.875	6.125
Ind.Harbor I-2	5.875	6.125
Irvin,Pa. U5	5.875	6.125
Kokomo,Ind. C16	6.525	....
MartinsFy.,O. W10	5.875	....
Pittsburg,Cal. C11	6.625	....
SparrowsPt. B2	5.875	....
Torrance,Cal. C11	6.625	....

SHEETS, Culvert, No. 16 Pure Iron

Ashland,Ky. A10	6.125
Fairfield,Ala. T2	6.125
MartinsFerry,O. W10	6.125

SHEETS, Hot-Rolled Ingot Iron 18 Gage and Heavier

Ashland,Ky.(8) A10	4.025
Cleveland R2	4.375
Ind.Harbor,Ind. I-2	4.025
Warren,O. R2	4.375

SHEETS, Cold-Rolled Ingot Iron

Butler,Pa. A10	5.075
Cleveland R2	5.175
Middletown,O. A10	5.075
Warren,O. R2	5.175

SHEETS, Galvanized Ingot Iron No. 10 flat

Ashland,Ky.(8) A10	5.325
Canton,O. R2	5.825

SHEETS, ZINCGRIP Ingot Iron

Butler,Pa. A10	5.575
Middletown,O. A10	5.575

SHEETS, ALUMINIZED

Butler,Pa. A10	8.425

TINPLATE, American Coke (Base Box)

	1.25 lb	1.50 lb
Aliquippa,Pa. J5	$8.70	$8.95
Fairfield,Ala. T2	8.80	9.05
Gary,Ind. U5	8.70	8.95
Ind.Har. I-2, Y1	8.70	8.95
Irvin,Pa. U5	8.70	8.95
Pitts.,Cal. C11	9.45	9.70
Sp.Pt.,Md. B2	8.80	9.05
Warren,O. R2	8.70	...
Weirton,W.Va. W6	8.70	8.95
Yorkville,O. W10	8.70	8.95

TIN PLATE, Electrolytic (Base Plate)

	0.25 lb	0.50 lb	0.75 lb
Aliquippa,Pa. J5	$7.40	$7.65	$8.05
Fairfield,Ala. T2	7.50	7.75	8.15
Gary,Ind. U5	7.40	7.65	8.05
GraniteCity,Ill. G4	7.60	7.85	8.25
IndianaHarbor,Ind. I-2, Y1	7.40	7.65	8.05
Irvin,Pa. U5	7.40	7.65	8.05
Niles,O. R2	7.40	...	...
Pittsburg,Calif. C11	8.15	8.40	8.80
SparrowsPoint,Md. B2	7.50	7.75	8.15
Weirton,W.Va. W6	7.40	7.65	8.05
Yorkville,O. W10	7.40	7.65	8.05

SHEETS, SILICON, H.R. or C.R.(22 Ga.) COILS (Cut lengths 1/2c lower)

	Field	Arma-ture	Elec-tric	Motor	Dyna-mo
BeechBottom W10 (cut lengths)	...	...	7.85	9.10	9.90
Brackenridge,Pa. A4	...	...	8.35	9.60	10.40
GraniteCity,Ill. G4 (cut lengths)	...	...	8.55	9.80	...
IndianaHarbor,Ind. I-2	7.55	7.85	(34)	(41)	...
Mansfield,O. E6 (cut lengths)	7.20	7.35	7.85	9.10	9.90
Niles,O. N12 (cut lengths)	7.05	7.35	7.85	...	...
Vandergrift,Pa. U5	...	7.85	8.35	9.60	10.40
Warren,O. R2	7.55	7.85	8.35	9.60	10.40
Zanesville,O. A10	...	7.85	8.35	9.60	10.40

SHEETS, SILICON (22 Ga. Base) COILS (Cut Length 1/2c lower)

Transformer Grade	72	65	58	52
BeechBottom W10 (cut lengths)	10.45	11.00	11.70	12.50
Brackenridge,Pa. A4	10.95	....	....	....
Vandergrift,Pa. U5	10.95	11.50	12.20	13.00
Warren,O. R2	10.95	....	....	....
Zanesville,O. A10	10.95	11.50	12.20	13.00

H.R. or C.R. COILS AND CUT LENGTHS, SILICON (22 Ga.)

	T-100	T-90	T-80	T-73
Butler,Pa. A10 (C.R.)	....	....	15.35	15.85
Vandergrift,Pa. U5	13.50	14.35	15.35	15.85

MANUFACTURING TERNES (Special Coated)

Fairfield,Ala. T2	$7.85
Gary,Ind. U5	7.75
Irvin,Pa. U5	7.75
Yorkville,O. W10	7.75

SHEETS, LT. Coated Ternes, 6 lb

Yorkville,O. W10	$8.65

SHEETS, Mfg. Ternes, 8 lb (Commercial Quality)

Gary,Ind. U5	$9.75
Yorkville,O. W10	9.75

SHEET, Long Terne Steel (Commercial Quality)

BeechBottom,W.Va. W10	5.475
Gary,Ind. U5	5.475
Mansfield,O. E6	6.05
Middletown,O. A10	5.475
Niles,O. N12	6.275
Weirton,W.Va. W6	5.475

SHEETS, Long Terne, Ingot Iron

Middletown,O. A10	5.875

ROOFING SHORT TERNES (8 lb. Coated)

Gary,Ind. U5	9.75

STRIP, Hot-Rolled High-Strength Low-Alloy

Bessemer,Ala. T2	5.65
Conshohocken,Pa. A3	5.90
Ecorse,Mich. G5	6.30
Fairfield,Ala. T2	5.65
Fontana,Calif. K1	6.55
Gary,Ind. U5	5.65
Ind.Harb.,Ind. I-2	5.65
Ind.Harbor,Ind. Y1	6.15
Lackawanna,N.Y. B2	5.70
LosAngeles(25) B3	6.40
Seattle(25) B3	6.65
Sharon,Pa. S3	5.65
So.SanFrancisco(25) B3	6.40
SparrowsPoint,Md. B2	5.70
Warren,O. R2	5.65
Weirton,W.Va. W6	6.10
Youngstown Y1	6.15
Youngstown U5	5.65

STRIP, Cold-Rolled High-Strength Low-Alloy

Cleveland J5	7.45
Cleveland A7	7.30
Dover,O. G6	8.00
Ecorse,Mich. G5	8.15
Lackawanna,N.Y. B2	7.90
Sharon,Pa. S3	7.30
SparrowsPoint,Md. B2	7.90
Warren,O. R2	7.30
Weirton,W.Va. W6	7.95
Youngstown Y1	7.80

STRIP, Hot-Rolled Carbon

Ala.City,Ala.(27) R2	3.725
Alton,Ill. L1	4.20
Ashland,Ky.(8) A10	3.725
Atlanta A11	4.275
Bessemer,Ala. T2	3.725
Bridgeprt,Conn.(10) S15	4.225
Buffalo(27) R2	3.725
Butler,Pa. A10	3.725
Carnegie,Pa. S18	4.225
Conshohocken,Pa. A3	4.125
Detroit M1	4.40
Ecorse,Mich. G5	4.025
Fairfield,Ala. T2	3.725
Fontana,Calif. K1	4.975
Gary,Ind. U5	3.725
Houston,Tex. S5	4.125
Ind.Harbor,Ind. I-2,Y1	3.725
Johnstown,Pa.(25) B2	3.725
KansasCity,Mo.(9) S5	4.325
Lackaw'na,N.Y.(32) B2	3.725
LosAngeles(25) B3	4.475
Milton,Pa. B6	4.35
Minnequa,Colo. C10	4.775
NewBritain(10) S15	4.225
N.Tonawanda,N.Y. B11	3.725
Pittsburg,Calif. C11	4.475
Riverdale,Ill. A7	3.725
SanFrancisco S7	5.00
Seattle(25) B3	4.725
Seattle N14	4.75
Sharon,Pa. S3	4.225
So.Chicago,Ill. W14	3.725
So.SanFrancisco(25) B3	4.475
SparrowsPoint,Md. B2	3.725
Sterling,Ill. N15	4.725
Torrance,Calif. C11	4.475
Warren,O. R2	3.725
Weirton,W.Va. W6	3.825
WestLeechburg,Pa. A4	3.975
Youngstown U5, Y1	3.725

STRIP, Hot-Rolled Alloy

Bridgeprt,Conn.(10) S15	6.05
Carnegie,Pa. S18	6.45
Fontana,Calif. K1	7.30
Gary,Ind. U5	6.10
Houston,Tex. S5	6.50
KansasCity,Mo. S5	6.70
Midland,Pa. C18	5.85
NewBritn,Conn.(10) S15	6.05
Sharon,Pa. S3	6.45
Youngstown U5	6.10

STRIP, Cold-Rolled Carbon

Anderson,Ind.(40) G6	5.50
Bridgeprt,Conn.(10) S15	5.80
Butler,Pa. A10	5.10
Cleveland A7, J5	5.10
Dearborn,Mich. D3	6.05
Detroit D2	5.60
Detroit M1	5.45
Dover,O.(40) G6	5.50
Ecorse,Mich. G5	5.30
Follansbee,W.Va. F4	5.10
Fontana,Calif. K1	6.75
FranklinPark,Ill.(40) T6	5.35
Ind.Harbor,Ind. I-2	5.35
Lackawanna,N.Y. B2	5.10
LosAngeles C1	6.85
Mattapan,Mass. T6	5.95
Middletown,O. A10	5.10
NewBritain(10) S15	5.80

STRIP, Cold-Finished, Spring Steel (Annealed)

	0.26-0.40C	0.41-0.60C	0.61-0.80C	0.81-1.05C	1.06-1.35C
Berea,O. C7	...	7.65	8.25	10.20	12.50
Bridgeport,Conn.(10) S15	5.80	7.65	8.25	10.20	12.50
Bristol,Conn. W1	...	...	8.55	10.50	....
Carnegie,Pa. S18	...	7.65	8.25	10.20	12.50
Cleveland A7	5.10	7.30	8.25	10.20	12.50
Dearborn,Mich. D3	6.05	7.90	8.50	...	....
Detroit D2	6.45	7.50	8.10	...	....
Dover,O. G6	5.70	7.65	8.25	10.20	12.50
FranklinPark,Ill. T6	5.45	7.45	8.40	10.35	12.65
Harrison,N.J. C18	...	...	8.55	10.50	12.80
Mattapan,Mass. T6	5.95	7.60	8.55	10.50	12.80
NewBritn.,Conn.(10) S15	5.80	7.65	8.25	10.20	12.50
NewCastle,Pa. B4	5.80	7.65	8.25	10.20	....
NewCastle,Pa. E5	5.80	7.65	8.25	10.20	12.50
NewHaven,Conn. D2	6.70	7.60	8.20	...	....
NewYork W3	...	7.95	8.55	10.50	12.80
Pawtucket,R.I. N8: Cleve.orPitts.Base	...	7.65	8.25	10.20	12.50
Worcester,Mass.,Base.	6.30	7.95	8.55	10.50	12.80
Sharon,Pa. S3	5.80	7.65	8.25	10.20	12.50
Trenton,N.J. R5	...	7.95	8.55	10.50	12.80
Wallingford,Conn. W2	6.30	7.60	8.20	10.15	12.65
Warren,O. T5	6.20	7.65	8.25	10.20	12.50
Weirton,W.Va. W6	5.80	7.65	8.25	10.20	12.50
Worcester,Mass. A7	5.40	7.60	8.55	10.50	12.80
Worcester,Mass. T6	5.95	7.60	8.55	10.50	12.80
Youngstown C8	...	7.65	8.25	10.20	12.50
Spring Steel (Tempered)					
Trenton,N.J. R5 (29)	...	...	10.30	12.50	15.35
Harrison,N.J. C18	...	...	10.30	12.50	15.35
NewYork W3	...	...	10.30*	12.50*	15.35*
Youngstown C8	...	...	10.30	12.50	15.35

* Plus $1.575 per 100 lb.

STRIP, Hot-Rolled Ingot Iron

Ashland,Ky(8) A10	3.975
Warren,O. R2	4.325

STRIP, Cold-Rolled Ingot Iron

Warren,O. R2	5.70

TIGHT COOPERAGE HOOP

Atlanta A11	4.45
Riverdale,Ill. A1	4.30
Sharon,Pa. S3	4.55
Youngstown U5	4.15

STRIP, Electro Galvanized

Dover,O. G6	5.50
Warren,O. T5	5.70
Weirton,W.Va. W6	5.10
Youngstown C8	5.70

STRIP, Cold-Rolled Alloy Steel

Bridgeprt,Conn.(10) S15	12.15
Carnegie,Pa. S18	12.00
Cleveland A7	11.40
Dover,O. G6	11.90
Fontana,Calif. K1	13.05
Harrison,N.J. C18	12.00
Midland,Pa. C18	12.00
NewBritn,Conn.(10) S15	12.15
Pawtucket,R.I.(11) N8	12.15
Pawtucket,R.I.(12) N8	12.45
Sharon,Pa. S3	12.00
Worcester,Mass. A7	11.70
Youngstown C8	12.00

STRIP, Hot-Rolled Ingot Iron

Ashland,Ky(8) A10	3.975
Warren,O. R2	4.325

STRIP, Cold-Rolled Ingot Iron

Warren,O. R2	5.70

TIGHT COOPERAGE HOOP

Atlanta A11	4.45
Riverdale,Ill. A1	4.30
Sharon,Pa. S3	4.55
Youngstown U5	4.15

Key to Producers

A1 Acme Steel Co.
A3 Alan Wood Steel Co.
A4 Allegheny Ludlum Steel
A7 American Steel & Wire
A8 Anchor Drawn Steel Co.
A9 Angell Nail & Chaplet.
A10 Armco Steel Corp.
A11 Atlantic Steel Co.
A13 American Cladmetals Co.

B1 Babcock & Wilcox Co.
B2 Bethlehem Steel Co.
B3 Beth. Pac. Coast Steel
B4 Blair Strip Steel Co.
B5 Bliss & Laughlin Inc.
B6 Bolardi Steel Corp.
B8 Braeburn Alloy Steel
B11 Buffalo Bolt Co.
B12 Buffalo Steel Div., H. K. Porter Co.
B14 A. M. Byers Co.

C1 Calstrip Steel Corp.
C2 Calumet Steel Div. Borg-Warner Corp.
C4 Carpenter Steel Co.
C5 Central Iron & Steel Div. Barium Steel Corp.
C7 Cleve. Cold Rolling Mills
C8 Cold Metal Products Co.
C9 Colonial Steel Co.
C10 Colorado Fuel & Iron
C11 Columbia-Geneva Steel
C12 Columbia Steel & Shaft
C13 Columbia Tool Steel Co.
C14 Compressed Steel Shaft
C16 Continental Steel Corp.
C17 Copperweld Steel Co.
C18 Crucible Steel Co.
C19 Cumberland Steel Co.
C20 Cuyahoga Steel & Wire
C22 Claymont Steel Corp.

D2 Detroit Steel Corp.
D3 Detroit Tube & Steel
D4 Disston & Sons, Henry
D6 Driver Harris Co.
D7 Dickson Weatherproof Nail Co.

E1 Eastern Gas&Fuel Assoc.
E2 Eastern Stainless Steel
E4 Electro Metallurgical Co.
E5 Elliott Bros. Steel Co.
E6 Empire Steel Corp.

F2 Firth Sterling Inc.
F3 Fitzsimons Steel Co.
F4 Follansbee Steel Corp.
F5 Franklin Steel Div. Borg-Warner Corp.
F6 Fretz-Moon Tube Co.
F7 Ft. Howard Steel & Wire
G2 Globe Iron Co.
G3 Globe Steel Tubes Co.
G4 Granite City Steel Co.
G5 Great Lakes Steel Corp.
G6 Greer Steel Co.

H1 Hanna Furnace Corp.

I-1 Igoe Bros. Inc.
I-2 Inland Steel Co.
I-3 Interlake Iron Corp.
I-4 Ingersoll Steel Div. Borg-Warner Corp.
I-7 Indiana Steel & Wire Co.

J1 Jackson Iron & Steel Co.
J3 Jessop Steel Co.
J4 Johnson Steel & Wire Co.
J5 Jones & Laughlin Steel
J6 Joslyn Mfg. & Supply
J7 Judson Steel Corp.
J8 Jersey Shore Steel Co.

K1 Kaiser Steel Corp.
K2 Keokuk Electro Metals
K3 Keystone Drawn Steel
K4 Keystone Steel & Wire

L1 Laclede Steel Co.
L2 LaSalle Steel Co.
L3 Latrobe Steel Co.
L5 Lockhart Iron & Steel
L6 Lone Star Steel Co.
L7 Lukens Steel Co.

WIRE, Merchant Quality

(6 to 8 gage)	An'ld.	Galv.
AlabamaCity R2	.6.075	6.325
Aliquippa J5	....6.075	6.45*
Atlanta A11	.....6.325	6.675
Bartonville(19)K4	.6.075	6.40
Buffalo W12	....5.225	....
Cleveland A7	...6.075	6.225
Crawfordsville M8	.6.175	6.55
Donora,Pa. A7	..6.075	6.225
Duluth,Minn. A7	.6.075	6.225
Fairfield T2	.....6.075	6.225
Houston,Tex. S5	..6.475	6.625
Johnstown B2	...6.075	6.45†
Joliet,Ill. A7	....6.075	6.225
KansasCy,Mo. S5	.6.675	6.825
Kokomo C16	....6.175	6.425
LosAngeles B3	..7.025	....
Minnequa C10	...6.325	6.70*
Monessen P7	....6.075	6.45
Palmer W12	....5.525	....
Pitts.,Calif. C11	..7.025	7.175
Prtsmth.(18)P12	..6.475	....
Rankin A7	.....6.075	6.225
So.Chicago R2	..6.075	6.325
So.S.Fran. C10	..7.025	7.40*
SparrowsPt. B2	..6.175	6.55†
Sterling,Ill.(1)N15	6.075	6.40
Struthers,O. Y1	..6.075	6.475
Torrance,Cal. C11	7.025	....
Worcester A7	...6.375	6.525

* Based on 14-cent zinc; † 14.50-cent zinc.

ROPE WIRE

Alton,Ill. L1	.....9.15
Bartonville,Ill. K4	.....8.95
Buffalo W12 (43)	.....8.55
Fostoria,O. S1 (43)	.....8.85
Johnstown,Pa. B2 (43)	..8.55
Monessen,Pa. P16 (43)	..8.55
Monessen,Pa. P7 (43)	..8.80
Muncie,Ind. I-7 (43)	...8.75
Palmer,Mass. W12 (43)	.8.85
Portsmouth,O. P12 (43)	.8.55
Roebling,N.J. R5 (43)	..8.85
SparrowsPt. B2 (43)	...8.65
Struthers,O. Y1 (43)	...8.55
Worcester J4, T6 (43)	..8.85

(A) Plow and Mild Plow; add 0.25c for improved plow.

WIRE, Manufacturers Bright, Low Carbon

AlabamaCity,Ala. R2	..5.225
Aliquippa,Pa. J5 (42)	..4.85
Atlanta A11	.....5.475
Alton,Ill. L1	.....5.45
Bartonville,Ill. K4	.....5.325
Buffalo W12	.....5.225
Chicago W13	.....5.475
Cleveland A7, C20	...5.225
Crawfordsville,Ind. M8	.5.325
Donora,Pa. A7	.....5.225
Duluth,Minn. A7	.....5.225
Fairfield,Ala. T2	.....5.225
Fostoria,O. (24) S1	...5.725
Houston S5	.....5.625
Johnstown,Pa. B2	....5.225
Joliet,Ill. A7	.....5.225
KansasCity,Mo. S5	....5.825
Kokomo,Ind. C16	....5.325
LosAngeles B3	.....6.175
Minnequa,Colo. C10	...5.475
Monessen,Pa. P7	.....5.475
Newark 6-8 ga I-1	....5.88
No.Tonawanda B11	...5.225
Palmer,Mass. W12	....5.525
Pittsburg,Calif. C11	...6.175
Portsmouth,O. P12	....5.625
Rankin,Pa. A7	.....5.225
So.Chicago,Ill. R2	.....5.225
So.SanFrancisco C10	..6.175
SparrowsPoint,Md. B2	..5.325
Sterling,Ill.(1) N15	....5.225
Struthers,O. Y1	.....5.225
Torrance,Calif. C11	...6.375
Waukegan,Ill. A7	.....5.225
Worcester,Mass. A7	...5.525

WIRE, Cold-Rolled Flat

Anderson,Ind. G6	.....6.20
Buffalo W12 (43)	.....6.35
Cleveland A7 (43)	.....5.85
Crawf'sville,Ind. M8(43)	5.85
Dover,O. G6	.....6.20
Fostoria,O. S1 (43)	.....6.00
Kokomo,Ind. C16 (43)	..5.70
FranklinPark,Ill. T6(43)	6.20
Massillon,O. R8 (43)	....5.85
Monessen,Pa. P16 (43)	..6.35
Monessen,Pa. P7 (43)	...6.10
Pawtkt,R.I.(12) N8 (43)	6.85
Trenton,N.J. R5 (43)	...6.15
Worcester,Mass. A7 (43)	.6.15
Worcester,Mass. T6 (43)	6.50
Worcester,Mass. W12(43)	6.65

WIRE, Galv'd ACSR for Cores

Bartonville,Ill. K4	....8.90
Monessen,Pa. P16 (43)	..8.50
Muncie,Ind. I-7 (43)	...8.70
Roebling,N.J. R5 (43)	...8.80
SparrowsPt.,Md. B2(43)	.8.60
Johnstown,Pa. B2 (43)	..8.50

WIRE (16 gage) (Add 4.7% on base and extras)	Stone	Galv. Stone
Aliquippa J5	....10.15	12.15
Bartonville(19)K4	10.25	12.00*
Cleveland A7	....10.25	11.55
Crawfrdsville M8	10.25	12.00
Fostoria,O. S1	..10.40	13.00
Johnstown B2	..10.73	12.588
Kokomo C16	.10.625†	12.325†
Minnequa C10	..10.40	12.425*
Palmer,Mass. W12	.10.25	12.15
Pitts.,Cal. C11	..10.60	11.90
SparrowsPt. B2	..10.84	12.684
Waukegan A7	...10.25	11.55
Worcester A7	.....	11.85

* Based on 14-cent; § 14.50 cent zinc. † Includes 4.7% increase.

WIRE, MB Spring, High Carbon

Aliquippa,Pa. J5 (43)	..6.25
Alton,Ill. L1	.....6.85
Bartonville,Ill. K4	.....6.64
Buffalo W12 (43)	.....6.25
Cleveland A7 (43)	.....6.25
Donora,Pa. A7 (43)	.....6.25
Duluth,Minn. A7 (43)	..6.25
Fostoria,O. S1 (43)	.....6.25
Johnstown,Pa. B2 (43)	..6.25
Millbury(12) N6 (43)	8.05
Minnequa,Colo. C10 (43)	.6.50
Monessen,Pa. P7 (43)	..6.25
Monessen,Pa. P16	.....6.75
Muncie,Ind. I-7 (43)	...6.45
Palmer,Mass. W12 (43)	..6.55
Pittsburg,Calif. C11(43)	7.20
Roebling,N.J. R5 (43)	..6.55
Portsmouth,O. P12(43)	..6.25
So.Chicago,Ill. R2 (43)	..6.25
So.SanFran. C10 (43)	..7.20
SparrowsPt.,Md. B2 (43)	6.35
Struthers,O. Y1 (43)	....6.25
Trenton,N.J. A7 (43)	...6.55
Waukegan,Ill. A7 (43)	..6.25
Worcester A7, T6 (13)	..6.55
Worcester,Mass. W12(43)	6.55
Worcester,Mass. J4 (43)	6.75

WIRE, Tire Bead

Bartonville,Ill. K4	....11.51
Monessen,Pa. P16 (43)	.11.40
Roebling,N.J. R5 (43)	..11.55

WIRE, Fine & Weaving (8"Coils)

Bartonville,Ill. K4	.....9.42
Buffalo W12 (43)	.....8.90
Chicago W13	.....9.32
Cleveland A7 (43)	.....8.90
Crawf'sville,Ind. M8(43)	8.90
Fostoria,O. S1 (43)	....8.90
Johnstown,Pa. B2 (43)	..8.90
Kokomo,Ind. C16 (43)	..8.90
Monessen,Pa. P16 (43)	..8.90
Muncie,Ind. I-7 (43)	...9.10
Palmer,Mass. W12 (43)	.9.20
Robling,N.J. R5 (43)	..9.20
Waukegan,Ill. A7 (43)	.8.90
Worcstr,Mass. A7, T6(43)	9.20

WIRE, Barbed

	Col.
AlabamaCity,Ala. R2	...144
Aliquippa,Pa. J5	.....147*
Atlanta A11	149
Bartonville,Ill.(19) K4	..146
Crawfordsville,Ind. M8	.....
Donora,Pa. A7	142
Duluth,Minn. A7	142
Fairfield,Ala. T2	142
Houston,Tex. S5	150
Johnstown,Pa. B2	147
Joliet,Ill. A7	142
KansasCity,Mo. S5	154
Kokomo,Ind. C16	149
Minnequa,Colo. C10	....153*
Monessen,Pa. P7	147
Pittsburg,Calif. C11	162
Rankin,Pa. A7	142
So.Chicago,Ill. R2	144
So.SanFran., Calif. C10	.167*
SparrowsPoint,Md. B2	...149
Sterling,Ill.(1) N15	146

* Based on 14-cent zinc.

WIRE, Upholstery Spring

Aliquippa,Pa. J5	.....6.275
Alton,Ill. L1	.....6.50
Buffalo W12	.....6.275
Cleveland A7	.....6.275
Donora,Pa. A7	.....6.275
Duluth,Minn. A7	.....6.275
Johnstown,Pa. B2	....6.275
LosAngeles B3	.....7.225
Minnequa,Colo. C10	...6.525
Monessen,Pa. P7	.....6.275
Monessen,Pa. P16 (42)	..6.40
NewHaven,Conn. A7	...6.575
Palmer,Mass. W12	....6.575
Pittsburg,Calif. C11	...7.225
Portsmouth,O. P12	....6.275
Roebling,N.J. R5	.....6.575
So.Chicago,Ill. R2	....6.275
So.SanFrancisco C10	..7.225
SparrowsPoint,Md. B2	..6.375
Torrance,Calif. C11	...7.225
Trenton,N.J. A7	.....6.575
Waukegan,Ill. A7	.....6.275
Worcester,Mass. A7	...6.575

WOVEN FENCE,9-15½ Ga. Col.

AlabamaCity,Ala. R2	...135
Ala.City,Ala.,17-18ga.R2	.222
Aliquippa,Pa.9-14½ga.J5	131
Atlanta A11	140
Bartonville,Ill.(19) K4	..137
Crawfordsville,Ind. M8	..140
Donora,Pa. A7	133
Duluth,Minn. A7	133
Fairfield,Ala. T2	133
Houston,Tex. S5	141
Johnstown,Pa. B2	138
Johnstown,17ga.,6" B2	..229
Joliet,Ill. A7	133
KansasCity,Mo. S5	145
Kokomo,Ind. C16	140
Minnequa,Colo. C10	....146*
Monessen,Pa. P7	138
Pittsburg,Calif. C11	156
Rankin,Pa. A7	133
So.Chicago,Ill. R2	135
Sterling,Ill.(1) N15	137

* Based on 14-cent zinc.

BALE TIES, Single Loop

	Col.
AlabamaCity,Ala. R2	...132
Atlanta A11	135
Bartonville,Ill.(19) K4	..132
Crawfordsville,Ind. M8	..134
Donora,Pa. A7	132
Duluth,Minn. A7	132
Fairfield,Ala. T2	132
Joliet,Ill. A7	132
KansasCity,Mo. S5	144
Kokomo,Ind. C16	134
Minnequa,Colo. C10	137
Pittsburg,Calif. C11	156
So.Chicago,Ill. R2	132
So.SanFran.,Calif. C10	..156
SparrowsPoint,Md. B2	..134
Sterling,Ill.(1) N15	132

FENCE POSTS

ChicagoHts.,Ill. C2	145
Duluth,Minn. A7	133
Franklin,Pa. F5	145
Huntington,W.Va. W7	...148
Johnstown,Pa. B2	148
Marion,O. P11	140
Minnequa,Colo. C10	138
Moline,Ill. R2	136
So.Chicago,Ill. R2	140
Tonawanda,N.Y. B12	...148
Williamsport,Pa. S19	...158

TRACK BOLTS (20) Treated

KansasCity,Mo. S5	.....9.85
Lebanon,Pa. (31) B2	...9.85
Minnequa,Colo. C10	....9.85
Pittsburgh O3, P14	....9.85

AXLES

Ind.Harbor,Ind. S13	....5.65
Johnstown,Pa. B2	.....5.65

NAILS, Stock

To dealers & mfrs. (7)	Col.
AlabamaCity,Ala. R2 (44)	118
Aliquippa,Pa. J5 (44)	...118
Atlanta A11	130
Bartonville,Ill.(19) K4	..127
Chicago,Ill. W13 (44)	...118
Cleveland A9 (44)	125
Crawfordsville,Ind. M8	.130
Donora,Pa. A7 (44)	118
Duluth,Minn. A7 (44)	118
Fairfield,Ala. T2 (44)	118
Galveston,Tex. D7 (44)	...126
Houston,Tex. S5 (44)	126
Johnstown,Pa. B2 (44)	...118
Joliet,Ill. A7 (44)	118
KansasCity,Mo. S5 (44)	..130
Kokomo,Ind. C16	129
Minnequa,Colo. C10 (44)	.123
Monessen,Pa. P7	127
Pittsburg,Calif. C11 (44)	.137
Portsmouth,O. P12	132
Rankin,Pa. A7 (44)	118
So.Chicago,Ill. R2 (44)	...118
SparrowsPoint,Md. B2	(44) 120
Sterling,Ill.(1) N15	(44) .118
Torrance,Calif. C11	(44) .138
Worcester,Mass. A7	(44) .124

NAILS, Cut (100 lb keg)

To dealers (33)	
Conshohocken,Pa. A3	..$7.80
Wheeling,W.Va. W10	....7.80

TIE PLATES

Fairfield,Ala. T2	.....4.775
Gary,Ind. U5	.....4.775
Ind.Harbor,Ind. I-2	....4.775
Lackawanna,N.Y. B2	..4.775
Minnequa,Colo. C10	..$95.50*
Pittsburg,Calif. C11	....4.925
Seattle B3	.....4.925
Steelton,Pa. B2	.....4.775
Torrance,Calif. C11	...4.925

* Per net ton.

JOINT BARS

Bessemer,Pa. U5	.....4.925
Fairfield,Ala. T2	.....4.925
Ind.Harbor,Ind. I-2	....4.925
Joliet,Ill. U5	.....4.925
Lackawanna,N.Y. B2	..4.925
Minnequa,Colo. C10	....4.925
Steelton,Pa. B2	.....4.925

STANDARD TRACK SPIKES

Ind.Harbor,Ind. I-2, Y1	6.65
KansasCity,Mo. S5	.....6.90
Lebanon,Pa. B2	.....6.65
Minnequa,Colo. C10	....6.65
Pittsburgh J5	.....6.65
Seattle B3	.....7.15
So.Chicago,Ill. R2	.....6.65
Struthers,O. Y1	.....6.65
Youngstown R2	.....6.65

STAPLES, Polished, Stock

To dealers & mfrs. (7)	Col.
AlabamaCity,Ala. R2	(44) 118
Atlanta A11	129
Bartonville,Ill. K4	..126
Chicago W13	127
Crawfordsville,Ind. M8	..128
Donora,Pa. A7 (45)	118
Duluth,Minn. A7 (45)	118
Fairfield,Ala. T2 (45)	118
Johnstown,Pa. B2 (45)	..118
Joliet,Ill. A7 (45)	118
Kokomo,Ind. C16	128
Minnequa,Colo. C10 (45)	.123
Monessen,Pa. P7	127
Pittsburg,Calif. C11 (45)	.137
Portsmouth,O. P12	132
Rankin,Pa. A7 (45)	118
SparrowsPoint,Md. B2	(45) 120
Sterling,Ill.(1) N15 (45)	..118
Torrance,Calif. C11 (45)	.138
Worcester,Mass. A7 (45)	.124

NAILS, Cut (100 lb keg)

To dealers (33)	
Conshohocken,Pa. A3	..$7.80
Wheeling,W.Va. W10	....7.80

TIE PLATES

Fairfield,Ala. T2	.....4.775
Gary,Ind. U5	.....4.775
Ind.Harbor,Ind. I-2	....4.775
Lackawanna,N.Y. B2	..4.775
Minnequa,Colo. C10	..$95.50*
Pittsburg,Calif. C11	....4.925
Seattle B3	.....4.925
Steelton,Pa. B2	.....4.775
Torrance,Calif. C11	...4.925

* Per net ton.

JOINT BARS

Bessemer,Pa. U5	.....4.925
Fairfield,Ala. T2	.....4.925
Ind.Harbor,Ind. I-2	....4.925
Joliet,Ill. U5	.....4.925
Lackawanna,N.Y. B2	..4.925
Minnequa,Colo. C10	....4.925
Steelton,Pa. B2	.....4.925

STANDARD TRACK SPIKES

Ind.Harbor,Ind. I-2, Y1	6.65
KansasCity,Mo. S5	.....6.90
Lebanon,Pa. B2	.....6.65
Minnequa,Colo. C10	....6.65
Pittsburgh J5	.....6.65
Seattle B3	.....7.15
So.Chicago,Ill. R2	.....6.65
Struthers,O. Y1	.....6.65
Youngstown R2	.....6.65

RAILS	Std. No. 1	Std. No. 2	Std. All No. 2	Std. Tee Rails 60 lb Under
Bessemer,Pa. U5	3.775	3.675	3.725	4.25
Ensley,Ala. T2	3.775	3.675	...	4.25
Fairfield,Ala. T2	....	....	....	4.25
Gary,Ind. U5	3.775	3.675	3.725	...
Huntington,W.Va. W7	....	....	....	5.25
IndianaHarbor,Ind. I-2	3.775	3.675	3.725	...
Johnstown,Pa. B2	....	....	...	(16)4.25
Lackawanna,N.Y. B2	3.775	3.675	...	4.25
Minnequa,Colo. C10	$75.50*	$73.50*	...	4.75
Steelton,Pa. B2	3.775	3.675	...	...
Williamsport,Pa. S19	....	....	....	5.00

* Per net ton.

TOOL STEEL

(Prices subject to 4.7% increase)

Grade	$ per lb
Regular Carbon	0.230
Extra Carbon	0.270
Special Carbon	0.325
Oil Hardening	0.350
5% Cr Hot Work	0.350
Hi-Carbon-Cr	0.635

Grade by Analysis

W	Cr	V	Co	
18	4	1	....	1.505
18	4	2	....	1.65-1.68
20.25	4.25	1.6	12.25	3.535-3.675
19	4	2	7	2.460
18.25	4.25	1	4.75	2.125
18	4	2	9	2.445-2.45
13.5	4	3	....	1.6025
9	3.25	0.5	....	1.01

W	Cr	V	Mo	
6.4	4.5	1.9	5	0.96-0.965
6	4	3	6	1.190
1.5	4	1	8.5	0.810

Tool steel producers include: A4, A8, B2, B8, C4, C9, C13, C18, D4, F2, J3, L3, M14, S8, U4, V2 and V3.

Footnotes

(1) Chicago base.
(2) Angles, flats, bands.
(3) Merchant.
(4) Reinforcing.
(6) Chicago or Birm. base.
(7) To jobbers, 3 cols. lower.
(8) 16 gage and heavier.
(9) 6 in. and narrower.
(10) Pittsburgh base.
(11) Cleveland & Pitts. base.
(12) Worcester, Mass. base.
(13) Add 0.50c for 17 Ga. & heavier.
(15) ½" and thinner.
(16) 40 lb and under.
(17) Plats only.
(18) To dealers.
(19) Chicago & Pitts. base.
(20) 0.25c off for untreated.
(21) New Haven Conn., base
(22) Del. San Francisco Bay area.
(23) 20 Ga. 36" wide.
(24) Deduct 0.20c, finer than 15 Ga.
(25) Bar mill bands.
(26) Reinforcing, mill lengths, to fabricators; to consumers, 5.85c.
(27) Bar mill sizes.
(28) Bonderized.
(29) Add $31.50 per ton.
(30) Sheared; add 0.35c for universal mill.
(31) Not annealed.
(32) Rd. or square edge.
(33) To jobbers, deduct 20c.
(34) 7.35c for cut lengths.
(35) 72" and narrower.
(36) 54" and narrower.
(37) 15 gage & lighter: 60" & narrower.
(38) 14 gage & lighter: 48" & narrower.
(39) 48" and narrower.
(40) Lighter than 0.035"; 0.035" and heavier, 0.25c higher.
(41) 9.10c for cut lengths.
(42) Plus 0.375c per 100 lb.
(43) Plus 4.7% on base and extras.
(44) Plus 45c per 100 lb.
(45) Plus 40c per 100 lb.

Key to Producers

M1	McLouth Steel Corp.
M4	Mahoning Valley Steel
M5	Medart Co.
M6	Mercer Tube & Mfg. Co.
M8	Mid-States Steel & Wire
M9	Midvale Co.
M12	Moltrup Steel Products
M13	Monarch Steel Co.
M14	McInnes Steel Co.
N2	National Supply Co.
N3	National Tube Div.
N5	Nelsen Steel & Wire Co.
N6	NewEng-HighCarb.Wire
N8	Newman-Crosby Steel
N12	Niles Rolling Mill Div.
N14	Nrthwst. Steel Roll. Mills
N15	Northwestern S.&W. Co.
N16	New Delphos Mfg. Co.
O3	Oliver Iron & Steel Corp.
O4	Oregon Steel Mills
P1	Pacific States Steel Corp.
P2	Pacific Tube Co.
P4	Phoenix Iron & Steel Co.
P5	Pilgrim Drawn Steel
P6	Pittsburgh Coke & Chem.
P7	Pittsburgh Steel Co.
P9	Pittsburgh Tube Co.
P11	Pollak Steel Co.
P12	Portsmouth Division, Detroit Steel Corp.
P13	Precision Drawn Steel
P14	Pitts. Screw & Bolt Co.
P15	Pittsburgh Metallurgical
P16	Page Steel & Wire Div., Amer. Chain & Cable
P17	Plymouth Steel Co.
R1	Reeves Steel & Mfg. Co.
R2	Republic Steel Corp.
R3	Rhode Island Steel Corp.
R5	Roebling's Sons, John A.
R6	Rome Strip Steel Co.
R7	Rotary Electric Steel Co.
R8	RelianceDiv.,EatonMfg.
S1	Seneca Wire & Mfg. Co.
S3	Sharon Steel Corp.
S5	Sheffield Steel Corp.
S6	Shenango Furnace Co.
S7	Simmons Co.
S8	Simonds Saw & Steel Co.
S9	Sloss-Sheffield S.&I. Div.
S13	Standard Forgings Corp.
S14	Standard Tube Co.
S15	Stanley Works
S16	Struthers Iron & Steel
S17	Superior Drawn Steel Co.
S18	Superior Steel Corp.
S19	Sweet's Steel Co.
S20	Southern States Steel
S24	Seidelhuber Steel
T2	Tenn. Coal & Iron Div.
T3	Tenn. Prod. & Chem.
T4	Texas Steel Co.
T5	Thomas Strip Division, Pittsburgh Steel Co.
T6	Thompson Wire Co.
T7	Timken Roller Bearing
T9	Tonawanda Iron Div., Am. Rad. & Stan. San.
U4	Universal Cyclops Steel
U5	United States Steel Co.
V2	Vanadium-Alloys Steel
V3	Vulcan Crucible Steel Co.
W1	Wallace Barnes Co.
W2	Wallingford Steel Co.
W3	Washburn Wire Co.
W4	Washington Steel Corp.
W6	Weirton Steel Co.
W7	W. Va. Steel & Mfg. Co.
W8	West.Auto.Mach.Screw
W9	Wheatland Tube Co.
W10	Wheeling Steel Corp.
W12	Wickwire Spencer Steel Div., Colo. Fuel & Iron
W13	Wilson Steel & Wire Co.
W14	Wisconsin Steel Div. International Harvester
W15	Woodward Iron Co.
W18	Wyckoff Steel Co.
Y1	Youngstown Sheet&Tube

LETS EXPANSION KEEP ON THE MOVE

PENFLEX TUBING

ABSORBS THERMAL EXPANSION...PROVIDES FLEXIBILITY

Write for this helpful folder, "Flexineering."

Coal dust showers over equipment, floors and lines were regular occurrences in one large power plant. Thermal expansion moved steel tubes feeding powdered coal to the burners of high pressure steam boilers.

Then Penflex "Flexineering" recommended a flexible steel "overcoat" for the rigid steel feed pipe. Lengths of 20" and 24" I.D. interlocking, galvanized steel tubing were installed. Penflex tubing now forms a flexible seal between the hopper and tube, assuring protected delivery of powdered fuel.

Let Penflex "Flexineering" help you on tubing problems. Penflex manufactures a complete line of four-wall, interlocking and seamless welded corrugated flexible tubing . . . metallic hose, tubing or couplings from 1/8" I.D. and up . . . automatic barrel fillers, pneumatic rivet passers, accessories and fittings.

Pennsylvania Flexible Metallic Tubing Company, Inc., 7219 Powers Lane, Phila. 42, Pa.
Branch Sales Offices: **Boston • New York • Chicago • Houston • Cleveland • Los Angeles**

PENFLEX

HEART OF INDUSTRY'S LIFE LINES

BUTTWELD STANDARD PIPE, T & C

Carload discounts from list, %

Size—Inches	⅛		¼		⅜		½		¾		1		1¼		1½		2		2½		3	
List Per Ft	8.5c		11.5c		17c		23c		27.5c		37c		58.5c		76.5c	
Pounds Per Ft	0.85		1.13		1.68		2.28		2.73		3.68		5.82		7.62	
	Blk	Galv	Blk	Galv	Blk	Galv	Blk	Galv	Blk	Galv	Blk	Galv	Blk	Galv	Blk	Galv
Aliquippa, Pa. J5 (‡)	32.5	15.25	35.5	18.25	38	20.75	38.5	20.5	39	21	39.5	21.5	40	21.25	40	21.25
Alton, Ill. L1	29.5	10.5	32.5	14.5	35	18	35.5	18.5	36	19.5	36.5	20	37	20.5	37	20.5
Benwood, W. Va. W10	32.5	13.25	35.5	17.25	38	20.75	38.5	20.5	39	21.5	39.5	22	40	21.75	40	21.75
Etna, Pa. N2 (†)	32.5	13.25	35.5	17.25	38	20.75	38.5	20.5	39	22.25	39.5	22	40	21.75	40	21.75
Fontana, Calif. K1 (†)	21	1.75	24	5.75	26.5	9.25	27	9	27.5	10	28	10.5	28.5	10.25	28.5	10.25
Ind. Harbor, Ind. Y1 (†)	31.5	14.25	34.5	18.25	37	21.75	37.5	21	38	22	38.5	22.25	39	21.75	39	21.75
Lorain, O. N3 (*)	32.5	22.25	35.5	26.25	38	29.75	38.5	27.25	39	28.25	39.5	28.75	40	26.25	40	26.25
Sharon, Pa. M6	32.5	14.25	35.5	18.25	38	21.25	38.5	20.50	39	21.00	39.5	21.50	40	20.75	40	20.75
Sparrows Pt., Md. B2	30.5	11.25	33.5	15.25	36	18.75	36.5	18.5	37	19.5	37.5	20	38	19.75	38	19.75
Youngstown R2 (‡)	32.5	15.25	35.5	19.25	38	22.75	38.5	22.00	39	23.00	39.5	23.50	40	22.75	40	22.75
Youngstown Y1 (‡)	32.5	15.25	35.5	19.25	38	22.75	38.5	22.00	39	23.00	39.5	23.50	40	22.75	40	22.75
Wheatland, Pa. W9	32.5	13.25	35.5	16.25	38	18.75	38.5	19	39	19.5	39.5	20	40	20.25	40	20.25

SEAMLESS STANDARD PIPE, T & C

Carload discounts from list, %

Size-Inches	2		2½		3		3½		4		5		6	
List Per Ft	37c		58.5c		76.5c		92c		$1.09		$1.48		$1.92	
Pounds Per Ft.	3.68		5.82		7.62		9.20		10.89		14.81		19.18	
	Blk	Galv	Blk	Galv	Blk	Galv	Blk	Galv	Blk	Galv	Blk	Galv	Blk	Galv
Aliquippa, Pa. J5(‡)	24	6	27	8.25	27	8.25	29	10.25	29	10.25	33.75	15	33.75	15
Ambridge, Pa. N2	24	6	27	8.25	27	8.25	29	10.25	29	10.25	33.75	15	33.75	15
Lorain, O. N3 (*)	24	12.75	27	12.75	27	12.75	29	14.75	29	14.75	33.75	19.5	33.75	19.5
Youngstown Y1 (‡)	24	7.50	27	9.25	27	9.25	29	11.25	29	11.25	33.75	16	33.75	16

ELECTRIC WELD STANDARD PIPE, T & C

Youngstown, R2 (‡)	24	7.50	27	9.25	27	9.25	29	11.25	29	11.25	33.75	16	33.75	16

BUTTWELD STANDARD PIPE, T & C

Carload discounts from list, %

Size—Inches	⅛		¼		⅜		½		¾		1	
List Per Ft	5.5c		6c		6c		3½		4			
Pounds Per Ft	0.24		0.42		0.57		92c		$1.09			
	Blk	Galv	Blk	Galv	Blk	Galv	9.20		10.89			
Benwood, W. Va. W10	29.5	+0.25	23.25	+3.5	17.75	+7.75	Blk	Galv	Blk	Galv		
Butler, Pa. F6 (†)	30.5	1.25	25	+1.75	20	+5.5	33	14.25	33	14.25		
Etna, Pa. N2 (†)	30.5	1.25	25	+1.75	20	+5.5	..	....	..	....		
Sharon, Pa. M6 (‡)	29.5	+0.25	23	+4.25	18	+8.25	33	14.25	33	14.25		
Sparrows Pt., Md. B2	28.5	+0.75	23	+3.75	18	+7.50	..	....	..	....		
Youngstown R2 (‡)	..	....	..	....	..	....	..	....	..	....		
Wheatland, Pa. W9	28.5	+0.75	23	+3.75	18	+7.50	33	15.25	33	15.25		
							..	....	..	....		

Galvanized pipe discounts based on zinc price of: (†), 14c; (‡), 12.50c; ($), 14.50c; (*), 5c, with discounts adjusted depending on price of zinc at time of shipment.

BOILER TUBES

Net base c.l. prices, dollars per 100 ft., mill; minimum wall thickness, cut lengths 10 to 24 ft., inclusive.

O.D.	B.W	Seamless		Elec. Weld	
In.	Gage	H.R.	C.D.	H.R.	C.D.
1	13	14.19	16.71–17.77	16.20	16.20
1¼	13	16.97	19.80–21.26	16.46	19.19
1½	13	18.22–18.77	22.08–22.82	18.19	21.41
1¾	13	20.35–21.35	24.92–25.49	20.69	24.35
2	13	22.81–23.93	27.94–28.58	23.19	27.28
2¼	13	25.69–26.66	31.38–32.18	25.84	30.42
2½	12	28.40–29.36	34.55–35.58	28.46	33.50
2¾	12	31.28–32.17	37.83–39.19	31.19	36.67
3	12	33.87–34.82	40.09–42.44	33.05	38.86
	12	35.78–36.87	42.11–44.93	34.98	40.82

BOLTS, NUTS

CARRIAGE, MACHINE BOLTS
(F.o.b. midwestern plants; per cent off list for less than case lots to consumers)

6 in. and shorter:
- ½-in. & smaller diam. 15
- ⅝-in. & ¾-in. 18.5
- ⅞-in. and larger 17.5

Longer than 6 in.:
- All diams. 14

Lag bolts, all diams.:
- 6 in. and shorter 23
- over 6 in. long 21

Ribbed Necked Carriage 18.5
Blank 34
Plow 34
Step, Elevator, Tap and Sleigh Shoe 21
Tire Bolts 21
Boiler & Fitting-Up Bolts 31

NUTS

	Reg.	Hvy.
H.P. & C.P. Square:		
½-in. & smaller	15	15
⅝-in. & ¾-in.	12	6.5
⅞-in.-1½-in.	9	1
1⅝-in. & larger	7.5	1
H.P. Hex.:		
½-in. & smaller	26	22
⅝-in. & ¾-in.	16.5	6.5
⅞-in.-1½-in.	12	2
1⅝-in. & larger	8.5	2
C.P. Hex.:		
½-in. & smaller	26	22
⅝-in. & ¾-in.	23	17.5
⅞-in. & 1⅛-in.	19.5	12
1⅛-in. & larger	12	6.5

SEMIFINISHED NUTS
American Standard
(Per cent off list for less than case or keg quantities)

	Reg.	Hvy.
½-in. & smaller	35	28.5
⅝-in. & ¾-in.	29.5	22
⅞-in.-1½-in.	24	15
1⅝-in. & larger	13	8.5
		Light
⅞-in. & smaller		35
½-in. to ⅝-in.		28.5
¾-in. to 1½-in.		26

SQUARE HEAD SET SCREWS
(Packaged; per cent off list)

1 in. diam x 6 in. and shorter 38
1 in. and smaller diam. x over 6 in. 26

HEADLESS SET SCREWS
(Packaged; per cent off list)

No. 10 and smaller 35
¼-in. diam. & larger.. 16
N.F. thread, all diams.. 10

STEEL STOVE BOLTS
(F.o.b. plant, per cent off list in packages)

Plain finish .....48 & 10
Plated finishes ....31 & 10

HEXAGON CAP SCREWS
(1020 steel; packaged; per cent off list)

6 in. or shorter:
- ⅝-in. & smaller 42
- ¾-in. through 1 in. .. 34

Longer than 6 in.:
- ⅝-in. & smaller 26
- ¾-in. through 1 in. .. 4

RIVETS

F.o.b. midwestern plants
Structural ½-in., larger 7.85c.
⅞-in. under .... 36 off

ELECTRODES

(Threaded, with nipples, unboxed f.o.b. plant)

GRAPHITE

Diam. — Inches	Length	Cents per lb
17,18,20	60,72	17.85
8 to 16	48,60,72	17.85
7	48,60	19.57
6	48,60	20.95
	CARBON	
35,40	110	8.03
30	65,84,110	8.03
24	72 to 104	8.03
17 to 20	34,90	8.03

METALLURGICAL COKE

Price net ton

BEEHIVE OVENS

Connellsvil.fur. .$14.50-15.00
Connellsvil.fdy. ..16.50-17.50
New River foundry 20.80
Wise county, foundry.. 15.95
Wise county, furnace.. 15.20

OVEN FOUNDRY COKE

Kearney, N. J. ovens..$24.00
Everett, Mass., ovens New England, del.. *26.05
Chicago ovens 24.50
Chicago, del. 26.00
Terre Haute, ovens.. 24.05
Milwaukee, ovens 25.25
Indianapolis, ovens .. 24.25
Chicago, del. 28.12
Cincinnati, del. 25.85
Ironton, O., ovens.... 22.50
Cincinnati, del. 25.12
Painesville, O., ovens. 25.50
Cleveland, del. 27.43
Erie, Pa., ovens 25.00
Birmingham, ovens .. 20.30
Cincinnati, del. 25.23
LoneStar,Tex., ovens.. 18.50
Philadelphia, ovens .. 23.95
NewIleIsland,Pa.,ovens 23.00
Swedeland, Pa., ovens 23.85
St. Louis, ovens St. Louis, del. 25.40
Portsmouth, O., ovens 22.50
Cincinnati, del. 25.12
Detroit, ovens 25.50
Detroit, del. 26.50
Buffalo, del. 28.08
Flint, del. 28.23
Pontiac, del. 27.06
Saginaw, del. 28.58

*Or within $4.55 freight zone from works.

COAL, CHEMICALS

Spot, cents per gallon, ovens
Pure benzol 30.00-35.00
Toluol, one deg...30.00-33.00
Industrial xylol ..30.00-33.50
Per ton, bulk, ovens
Sulphate of ammonia .$40-$45
Cents per pound, ovens
Phenol, 40 (carlots, non-returnable drums) ..17.25

FLUORSPAR

Metallurgical grade, f.o.b. shipping point, in Ill., Ky., net tons, carloads, effective CaF_2 content 70%, $43; 60%, $40.

Imported, net ton, duty paid, metallurgical grade, $33-$35.

NOTE: Current prices on clad steels appeared on page 159, Dec. 1, issue.

STAINLESS STEEL

(Add 4.7% on base price and extras)

Type	Sheets	C.R. Strip	Bars Wire Structurals
301...	41.00	34.00	31.25
302...	41.25	36.75	31.50
303...	43.25	40.25	34.00
304...	43.25	38.75	33.00
309...	56.00	55.00	44.75
316...	57.00	59.00	49.25
321...	49.25	48.25	37.00
347...	53.75	52.25	41.50
410...	36.50	30.50	25.75
416...	37.00	37.00	26.25
420...	44.00	47.00	31.25
430...	39.00	31.00	26.25
501...	27.50	26.00	14.25
502...	28.50	27.00	15.25

Balt., Types 301-347 and 430 sheets, except 303 and 309 E2.

Brackenridge, Pa. sheets A4 quotes slight variations on Types 301-347.

Bridgeville, Pa., bars, wire, sheets & strip U4.

Butler, Pa. sheets and strip except Types 303, 309, 416, 420, 501 & 502, A10.

Carnegie, Pa., sheets and strip except Types 303, 416, 501 & 502 S18.

Cleveland, strip A7.

Detroit, strip M1 quotes 34.00c on Type 301; 36.50c, 302, 38.50c, 304; 58.50c, 316, 52.00c, 347; 30.50c, 410; 31.00c, 430.

Dunkirk, N. Y., bars, wire A4 quotes slight variations on Types 301-347.

Duquesne, Pa., bars U5.

Fort Wayne, Ind., bars and wire, except Types 501 & 502 J6 quotes slight variations on Types 301-347.

Gary, Ind., sheets except Type 416 U5.

Harrison, N. J., strip and wire C18.

Massillon, O., all items, R2.

McKeesport, Pa., bars, sheets except Type 416 U5.

Middletown, O., sheets and strip except Types 303, 416, 420, 501 and 502 A10.

Midland, sheets & strip C18.

Munhall, Pa., bars U5.

Muncie, Ind., wire I-7 quotes types 302, 304, 430.

Pittsburgh, sheets C18.

Reading, Pa., strip except 34.25c on Type 301 and 56.00c on 309; bars, except 31.50c on Type 301 and 45.25c on 309 C4.

Sharon Pa., strip, except Types 303, 309, 416, 501, 502 and 34.25c on Type 301 S3.

So. Chicago, Ill., bars & structurals U5.

Syracuse, N. Y., bars, wire & structurals C18.

Titusville, Pa., bars U4.

Wallingford, Conn., strip W2 quotes 0.25c higher.

Washington, Pa., bars, sheets & strip, except 0.25c higher on Type 301 J3.

Washington, Pa., Types 301 through 347 sheets & strip except 303, 309; 316 sheets 62.00c, strip 64.00c W4.

Watervliet, N. Y., structurals & bars A4 quotes variations on Types 301-347.

Waukegan, bars & wire A7.

West Leechburg, Pa., strip, A4 quotes slight variations on Types 301-347.

Youngstown, strip except Types 303, 309, 316, 416, 501 and 502 and 34.25c on Type 301 C8.

METAL POWDERS

(Per pound, f.o.b. shipping point in ton lots for minus 100 mesh, except as otherwise noted)

Sponge iron: Cents
98+% Fe, annealed 18.00
Unannealed 14.50
Swedish, c.l.f. New York, in bags..8.85-9.95

Electrolytic iron:
Annealed, 99.5% Fe. 42.50
Unannealed (99 + % Fe) 36.50
Unannealed, 99 + % Fe (minus 325 mesh) 53.50

Powder Flakes 48.50

Carbonyl Iron:
97.9-99.8% size 5 to 10 microns .83.00-148.00

Aluminum:
Carlots, freight allowed 31.00
Atomized, 500 lb drums, freight allowed 33.00

Antimony, 500 lb lots. 71.00
Brass, 20-ton lots.28.25-32.00
Bronze, 10-ton lots 51.25-60.00
Phosphor-Copper, 20-ton lots 50.00

Copper:
Electrolytic 37.25
Reduced 34.75

Lead 22.50
Magnesium 75.00-85.00

Manganese:
Minus 100 mesh 57.00
Minus 35 mesh 52.00
Minus 200 mesh 62.00

Nickel unannealed 84.00
Nickel-Silver 5-ton lots 44.50
Silicon 38.50
Solder (plus cost of metal) 8.50
Stainless Steel, 302.. 83.00
Zinc, 10-ton lots 20.00-28.00

Tungsten Dollars
Melting grade, 99% 60 to 200 mesh: 1000 lb and over.... 5.85
Less than 1000 lb .. 6.00

Molybdenum: 99.9%, minus 200 mesh 3.24

Chromium, electrolytic 99% Cr min. 3.50

One of a number of different Tumbling barrels in which sample parts are processed in the new Norton barrel-finishing department.

New Norton sample processing department helps manufacturers speed up production

Plan now to take advantage of this new enlarged service department.

If you'd like to find faster methods for deburring and forming uniform radii on vitally needed parts — or if you have special problems in finishing parts ranging from tiny needles to castings and forgings weighing several pounds — send us samples of your parts. Tumbling is very likely the answer to your problem. And the new Norton sample processing department is the ideal set-up for finding just exactly what you can accomplish through barrel-finishing. Many manufacturers have already realized substantial savings and speed-ups in production through this service.

This new Norton department has a variety of Tumbling barrels of different types and capacities plus auxiliary equipment such as a mechanically vibrated screen. Here, Norton production engineers determine for you — without charge or obligation — just exactly what tumbling can do for the metal parts you send. Detailed recommendations are then given so that you can know exactly how to get the best results for your particular problem. These recommendations include barrel type, size and speed, size and amount of ALUNDUM* Tumbling Abrasives to be used, amount of water, type and amount of compound or cleaner, time cycles and other data.

Send Samples Now

For sample processing, we need: representative sample parts plus (a) the finished sample to be matched (hand-finished, if necessary) and (b) information on your present barrel-finishing equipment, if any, including type and size of barrel and barrel speeds. These should be sent to Norton Company, Worcester 6, Massachusetts, attention of Sales Engineering Department, Abrasive Division.

About a week is required for processing the samples after they have been received.

Meanwhile, for further information get the 55-page Norton handbook on barrel-finishing. Ask your Norton Distributor for Form 501 or write us direct.

*Trade-Mark Reg. U. S. Pat. Off.

NORTON COMPANY, Worcester 6, Mass.
Distributors In All Principal Cities
Export: **Norton Behr-Manning Overseas Incorporated, Worcester 6, Mass.**

NORTON
ABRASIVES
Making better products to make other products better

WAREHOUSE STEEL PRODUCTS

(Representative prices, cents per pound for delivery within switching limits, subject to extras.)

	SHEETS			STRIP		BARS			Standard Structural Shapes	PLATES	
	H.R. 18 Ga., Heavier*	C.R.	Gal. 10 Ga.†	H.R.*	C.R.*	H.R. Rds.	C.F. Rds.	H.R. Alloy 4140†‡		Carbon	Floor
New York (city)	6.56	7.57	8.72	6.86	...	6.89	7.83‡	11.34	6.69	6.90	8.31
JerseyCty(c'try)	6.35	7.27	8.47	6.75	...	6.59	7.53	9.54	6.39	6.60	8.01
Boston (city) ..	6.71	7.56	8.83	6.75	...	6.62	7.69‡	11.38	6.76	7.00	8.18
Boston (c'try)..	6.51	7.36	8.63	6.55	...	6.42	7.49‡	11.18	6.56	6.80	7.98
Phila. (city) ...	6.36	7.38	8.55	6.70	8.55	6.67	7.70‡	11.04	6.42	6.49	7.62
Phila. (c'try) ..	6.11	7.13	8.30	6.45	8.30	6.42	7.45‡	10.79	6.17	6.24	7.36
Balt. (city) ...	6.01	7.37	8.62	6.62	...	6.61	7.62‡	11.37	6.67	6.67	7.90
Balt. (c'try) ..	5.81	7.17	8.42	6.42	...	6.41	7.42‡	11.17	6.47	6.47	7.70
Norfolk, Va. ..	7.60	...	...	...	...	6.44	8.45	...	7.25	6.64	7.33
Richmond, Va..	6.14	6.95	8.68	6.53	...	6.30	7.38	...	6.55	6.68	7.80
Wash. (w'hse) .	6.31	7.61	8.90	6.89	...	6.90	7.78	...	6.93	6.95	8.17
Buffalo (del.)..	6.00	6.85	8.61	6.41	...	6.10	7.15‡	11.27	6.28	6.50	7.87
Buffalo (w'hse)	5.80	6.65	8.41	6.21	...	5.90	6.95‡	11.07	6.08	6.30	7.67
Pitts. (w'hse)..	5.80	6.65	8.00	5.97	...	5.83	6.90‡	10.65	5.95	6.00	7.18
Detroit (w'hse).	6.07	6.92	8.64	6.13	7.70-8.03	6.12	7.10‡	10.92	6.42	6.47	7.52
Cleveland (del.)	6.00	6.85	8.34	6.20	...	6.09	7.10‡	10.99	6.48	6.37	7.71
Cleve. (w'hse) .	5.80	6.65	8.14	6.00	...	5.89	6.90‡	10.79	6.28	6.17	7.51
Cincin. (city) ..	6.28	6.87	8.62	6.29	...	6.28	7.31‡	11.22	6.87	6.62	7.75
Chicago (city)..	6.00	6.85	8.20	6.03	...	6.03	7.00‡	10.85	6.15	6.20	7.38
Chicago (w'hse)	5.80	6.65	8.00	5.83	...	5.83	6.80‡	10.65	5.95	6.00	7.18
Milwau. (city) .	6.17	7.02	8.37	6.20	...	6.20	7.27‡	11.02	6.32	6.37	7.55
Milwau. (c'try).	5.97	6.82	8.17	6.00	...	6.00	7.07‡	10.82	6.12	6.17	7.35
St. Louis (del.)	6.30	7.14	8.50	6.34	...	6.33	7.40‡	11.15	6.55	6.60	7.78
St. L. (w'hse) .	6.10	6.94	8.00	6.14	...	6.13	7.20‡	10.95	6.35	6.40	7.58
Birm'hm (city).	5.95	6.80	7.85‡	5.95	...	5.95	8.40	...	6.10	6.25	8.65
Birm'hm(w'hse)	5.80	6.65	7.70‡	5.80	...	5.80	8.40	...	5.95	6.10	8.65
Los Ang. (city)	6.80	8.65	9.85	6.95	11.40	6.80	8.89‡	12.25	6.84	6.91	9.67
L. A. (w'hse)..	6.60	8.45	9.65	6.75	11.20	6.60	8.69‡	12.05	6.64	6.71	9.47
Seattle-Tacoma.	7.37	9.97	9.90	7.64	...	7.14	9.62‡	10.90§	6.89	7.20	9.11
S. Fran.(w'hse)	6.90	8.20	9.60	6.75	...	6.65	8.70‡	12.05	6.50	6.75	8.90

*Prices do not include gage extras; † prices include gage and coating extras, except Birmingham (coating extra excluded) and Los Angeles (gage extra excluded); ‡ includes 25-cent special bar quality extra; § as rolled; †† as annealed. Base quantities, 2000 to 9999 lb except as noted. Cold-rolled strip, 2000 lb and over; cold-finished bars, 2000 lb and over; [2]—500 to 1499 lb; [3]—450 to 1499 lb; [5]—1000 to 1999 lb.

Ores

Lake Superior Iron Ore

Gross ton, 51½% (natural), lower lake ports.

Old range bessemer	$9.45
Old range nonbessemer	9.30
Mesabi bessemer	9.20
Mesabi nonbessemer	9.05
High phosphorus	9.05

After adjustment for analysis, prices will be increased or decreased as the case may be for increases or decreases after Dec. 1, 1950, in applicable lake vessel rates, upper lake rail freights, dock handling charges and taxes thereon.

Eastern Local Iron Ore

Cents per unit del., E. Pa.

Foundry and basic 56-62% concentrates contract	17.00

Foreign Iron Ore

Cents per unit, c.i.f. Atlantic ports

Swedish basic, 60 to 68%:	
Spot	nom.
Long-term contract	24.00
North African hematities (spot)	26.00-28.00
Brazilian iron ore, 67-69% (spot)	32.00

Tungsten Ore

Net ton unit, duty paid

Foreign wolframite and scheelite, per net ton unit	$65.00
Domestic scheelite, mines	65.00

Manganese Ore

Manganese, 48% nearby, $1.18-1.22 per long ton unit, c.i.f. U. S. ports, duty for buyer's account; shipments against old contracts for 48% ore are being received from some sources at 85c-87c.

Chrome Ore

Gross ton, f.o.b. cars, New York, Philadelphia, Baltimore, Charleston, S. C., plus ocean freight differential for delivery to Portland, Oreg., or Tacoma, Wash.

Indian and African

48% 2.8:1	$39.00-42.00
48% 3:1	44.00-45.00
48% no ratio	30.00-32.00

South African Transvaal

44% no ratio	$27.00-28.00
48% no ratio	34.00-35.00

Brazilian

44% 25:1 lump	nom.

Domestic
(Rail nearest seller)

48% 3:1	$39.00

Molybdenum

Sulphide concentrates per lb, molybdenum content, mines	$1.00

MANGANESE ALLOYS

Spiegeleisen: (19-21% Mn, 1-3% Si). Carlot per gross ton, $85, Palmerton, Pa.; $85, Pittsburgh and Chicago; (16% to 19% Mn) $1 per ton lower.

Standard Ferromanganese: (Mn 78-82%, C 7% approx.) Carload, lump, bulk $225 per gross ton of alloy, c.l. packed $227; gross ton lots, packed, $252; less gross ton lots, packed $269; f.o.b. Alloy, W. Va., Niagara Falls, N. Y., Ashtabula, or Marietta, O. Base price: $227, Johnstown, Pa.; $225, Sheridan, Pa., Lynchburg, Va.; $228, Etna, Pa.; $226, Anaconda, Mont.

Shipment from Pacific Coast warehouses by one seller, add $33 to above prices f.o.b. Los Angeles, Oakland, Portland, Oreg. Shipment from Chicago warehouse, ton lots $267; less gross ton lots, $284, f.o.b. Chicago. Add or subtract $2.80 for each 1% or fraction thereof, of contained manganese over 82% or under 78%, respectively.

Low-Carbon Ferromanganese, Regular Grade: (Mn 85-90%). Carload, lump, bulk, max. 0.07% C, 27.95c per lb of contained Mn, carload packed 28.7c, ton lots 29.8c, less ton 31.0c. Delivered. Deduct 0.5c for max. 0.15% C grade from above prices, 1c for max. 0.30% C, 1.5c for max 0.50% C, and 6.3c for max 75% C—max 7% Si. **Special Grade:** (Mn 90% min, C 0.07% max, P 0.06% max). Add 0.5c to the above prices. Spot, add 0.25c.

Medium-Carbon Ferromanganese: (Mn 80-85%, C 1.5% max). Carload, lump, bulk 21.35c per lb of contained Mn, carload packed 22.1c, ton lot 23.2c, less ton 24.4c. Delivered. Spot, add 0.25c.

Manganese metal, 2" x D (Mn 96% min, Fe 2% max, Si 1% max, C 0.2% max): Carload, lump, bulk, 36.2c per lb of metal; packed, 36.95c; ton lot 38.45c; less ton lots 40.45c. Delivered. Spot, add 2c.

Manganese, Electrolytic: 40,000 lb or more, 30c; 2000 to 39,999 lb, 32c; 250 to 1999 lb, 34c. Premium for hydrogen-removed metal, 1.5c per pound; f.o.b. cars Knoxville, Tenn. Freight allowed to St. Louis or to any point east of Mississippi.

Silicomanganese: (Mn 65-68%). Contract, lump, bulk 1.0% C grade, 2% Si 23.5c per lb of alloy, carload packed, 12.15c, ton lots 13.05c, less ton 14.05c. Freight allowed. For 2% C grade, Si 15-17%, deduct 0.2c from above prices. For 3% C grade, Si 12-14.5%, deduct 0.5c from above prices. Spot, add 0.25c.

TITANIUM ALLOYS

Ferrotitanium, Low-Carbon: (Ti 20-25%, Al 3.5% max, Si 4% max, C 0.10% max). Contract, ton lots 2" x D, $1.50 per lb of contained Ti; less ton $1.55. (Ti 38-43%, Al 8% max, Si 4% max, C 0.10% max). Ton lots $1.35, less ton $1.37, f.o.b. Niagara Falls, N. Y., freight allowed to St. Louis. Spot Add 5c.

Ferrotitanium, High-Carbon: (Ti 15-18%, C 6-8%). Contract $177 per net ton, f.o.b. Niagara Falls, N. Y., freight allowed to destinations east of Mississippi river and north of Baltimore and St. Louis.

Ferrotitanium, Medium-Carbon: (Ti 17-21%, C 2-4.5%.) Contract, $195 per ton, f.o.b. Niagara Falls, N. Y., freight not exceeding St. Louis rate allowed.

OTHER FERROALLOYS

Ferrocolumbium: (Cb 56-60%, Si 8% max., C 0.4% max). Contract, ton lot, 2" x D, $4.90 per lb of contained Cb, less ton $4.95. Delivered. Spot, add 10c.

Ferrotantalum—Columbium: (Cb 40% approx, Ta 20% approx, and Cb and Ta 60% min, C 0.30% max) ton lots, 2" x D, $3.75 per lb of contained Cb plus Ta, deld.; less ton lots $3.80.

Silicaz Alloy: (Si 35-40%, Ca 9-11%, Al 6-8%, Zr 3-5%, Ti 9-11%, B 0.55-0.75%). Carload packed, 1" x D, 45c per lb of alloy, ton lot 47c, less ton lot 49c. Delivered.

SMZ Alloy: (Si 60-65%, Mn 5-7%, Zr, 5-7%, Fe 20% approx). Contract, carload, packed, ½" x 12 M, 17.5c per lb of alloy, ton lots 18.25c, less ton 19.5c. Deld. Spot, add 0.25c.

Graphidox No. 4: (Si 48-52%, Ca 5-7%, Ti 9-11%). C.l. packed, 18c per lb of alloy; ton lots 19c; less ton lots 20.50c, f.o.b. Niagara Falls, N. Y.; freight allowed to St. Louis.

V-S Foundry Alloy: (Cr 38-42%, Si 17-19%, Mn 8-11%). C.l. packed, 15c per lb of alloy; ton lots 16.50c; less ton lots 17.75c, f.o.b., Niagara Falls; freight allowed to St. Louis.

Simanal: (Approx 20% each Si, Mn, Al; bal. Fe) Lump, carload bulk 14.50c, packed 15.50c; ton lots, packed, 15.75c; less ton lots, packed, 16.25c per lb of alloy, delivered to destination within United States.

Ferrophosphorus: (23-25% based on 24% P content with unitage of $3 for each 1% of P above or below the base); carloads, f.o.b. sellers' works, Mt. Pleasant, Siglo, Tenn., $65 per gross ton.

Ferromolybdenum: (55-75%). Per lb, contained Mo f.o.b. Langeloth, $1.32 in all sizes except powdered which is $1.41; Washington, Pa., furnace, any quantity $1.32.

Technical Molybdic-Oxide: Per lb, contained Mo, f.o.b. Langeloth, Pa., $1.14, in cans; in bags, $1.13, f.o.b. Langeloth, Pa.; Washington, Pa., $1.13.

Note: For current prices on chromium, silicon, vanadium, boron and tungsten alloys see page 161. Dec. 1 issue; calcium, zirconium, briquetted alloys and refractories, page 157, Nov. 24 issue.

CEILING PRICES, IRON AND STEEL SCRAP

Prices as set forth in Office of Price Stabilization ceiling price regulation No. 5, as amended Feb. 5, 1952.

STEELMAKING SCRAP COMPOSITE

Dec. 4	$43.00
Nov. 27	43.00
Nov., 1952	43.00
Dec., 1951	43.00
Dec., 1947	40.13

Based on No. 1 heavy melting grade at Pittsburgh, Chicago and eastern Pennsylvania.

Basing point ceiling prices per gross ton from which maximum shipping prices are computed on scrap of dealer and industrial origin; and from which ceiling on-line and ceiling delivered prices are computed on scrap of railroad origin.

Basing Point	Grade 1 No. 1 Bundles Dealer, Industrial	No. 1 Heavy Melt Railroad
Alabama City, Ala.	$39.00	$41.00
Ashland, Ky.	42.00	44.00
Atlanta, Ga.	39.00	41.00
Bethlehem, Pa.	42.00	44.00
Birmingham, Ala.	39.00	41.00
Brackenridge, Pa.	44.00	46.00
Buffalo, N. Y.	43.00	45.00
Butler, Pa.	44.00	46.00
Canton, O.	44.00	46.00
Chicago, Ill.	42.50	44.50
Cincinnati, O.	43.00	45.00
Claymont, Del.	42.50	44.50
Cleveland, O.	43.00	45.00
Coatesville, Pa.	42.50	44.50
Conshohocken, Pa.	42.50	44.50
Detroit, Mich.	41.15	43.15
Duluth, Minn.	40.00	42.00
Harrisburg, Pa.	42.50	44.50
Houston, Tex.	37.00	39.00
Johnstown, Pa.	44.00	46.00
Kansas City, Mo.	39.50	41.50
Kokomo, Ind.	42.00	44.00
Los Angeles	35.00	37.00
Middletown, O.	43.00	45.00
Midland, Pa.	44.00	46.00
Minnequa, Colo.	38.00	40.00
Monessen, Pa.	44.00	46.00
Phoenixville, Pa.	42.50	44.50
Pittsburg, Calif.	35.00	37.00
Pittsburgh, Pa.	44.00	46.00
Portland, Oreg.	35.00	37.00
Portsmouth, O.	42.00	44.00
St. Louis, Mo.	41.00	43.00
San Francisco	35.00	37.00
Seattle, Wash.	35.00	37.00
Sharon, Pa.	44.00	46.00
Sparrows Pt., Md.	42.00	44.00
Steubenville, O.	44.00	46.00
Warren, O.	44.00	46.00
Weirton, W. Va.	44.00	46.00
Youngstown, O.	44.00	46.00

Differentials from Base

Differentials per gross ton for other grades of dealer and industrial scrap:

O-H and Blast Furnace Grades

2. No. 1 Busheling	Base
3. No. 1 Heavy Melting	—$1.00
4. No. 2 Heavy Melting	— 1.00
5. No. 2 Bundles	— 1.00
6. Machine Shop Turnings	—10.00
7. Mixed Borings and Short Turnings	— 6.00
8. Shoveling Turnings	— 6.00
9. No. 2 Busheling	— 4.00
10. Cast Iron Borings	— 6.00

Elec. Furnace and Fdry. Grades

11. Billet, Bloom & Forge Crops	+ 7.50
12. Bar Crops & Plate	+ 5.00
13. Cast Steel	+ 5.00
14. Punchings & Plate Scrap	+ 2.50
15. Electric Furnace Bundles	+ 2.00
Cut Structurals & Plate:	
16. 3 feet and under	+ 3.00
17. 2 feet and under	+ 5.00
18. 1 foot and under	+ 6.00
19. Briquetted Cast Iron Borings	Base
Foundry, Steel:	
20. 2 feet and under	Base
21. 1 foot and under	+ 2.00
22. Springs and Crankshafts	+ 1.00
23. Alloy Free Turnings	— 3.00
24. Heavy Turnings	— 1.00
25. Briquetted Turnings	Base
26. No. 1 Chemical Borings	— 3.00
27. No. 2 Chemical Borings	— 4.00
28. Wrought Iron	+10.00
29. Shafting	+10.00
31. Old Tin & Terne Plated Bundles	—10.00

Unprepared Grades

When compressed constitutes:

32. No. 1 Bundles	— 6.00
33. No. 2 Bundles	— 9.00
34. Other than material suitable for hydraulic compression	— 8.00

Restrictions on Use

(1) Prices for Grades 11 and 23 may be charged only when shipped to a consumer directly from an industrial producer; otherwise ceiling prices shall not exceed prices established for grades 12 and 8, respectively.

(2) Prices established for Grades 26 and 27 may be charged only when sold for use for chemical or annealing purposes, and in the case of Grade 27, for briquetting and direct charge into an electric furnace; otherwise ceiling prices shall not exceed price established for Grade 10.

(3) Prices established for Grade 28 may be charged only when sold to a producer of wrought iron; otherwise ceiling price shall not exceed ceiling price for corresponding grade of basic open-hearth.

(4) Premiums for Grades 11-18, 20 and 21 may be charged only when sold for use in electric and acid open-hearth furnaces or foundries; or in basic O-H or blast furnace under NPA allocation or OPS authorization.

(5) Prices for Grade 29 may be charged only when sold for forging or rerolling purposes.

Differentials from Base

Differentials per gross ton above or below the price of Grade 1 (No. 1 railroad heavy melting steel) for other grades of railroad steel scrap:

2. No. 2 Heavy Melting Steel	—$2.00
3. No. 2 Steel Wheel	Base
4. Hollow Bored Axles and loco. axles with keyways between the wheelseats.	Base
5. No. 1 Busheling	— 3.50
6. No. 1 Turnings	— 3.00
7. No. 2 Turnings, Drillings & Borings	—12.00
8. No. 2 Cast Steel and uncut wheelcenters	— 6.00
9. Uncut Frogs, Switches	Base
10. Flues, Tubes & Pipes	— 8.00
11. Structural, Wrought Iron and/or/steel, uncut	— 6.00
12. Destroyed Steel Cars	— 8.00
13. No. 1 Sheet Scrap	— 9.50
14. Scrap Rails, Random Lengths	+ 2.00
15. Rerolling Rails	+ 7.00
Cut Rails:	
16. 3 feet and under	+ 5.00
17. 2 feet and under	+ 6.00
18. 18 inches and under	+ 8.00
19. Cast Steel, No. 1	+ 3.00
20. Uncut Tires	+ 2.00
21. Cut Tires	+ 5.00
Bolsters & Side Frames:	
22. Uncut	Base
23. Cut	+ 3.00
24. Angles, Splice Bars & Tie Plates	+ 5.00
25. Solid Steel Axles	+12.00
26. Steel Wheels, No. 3, oversize	Base
27. Steel Wheels, No 3	+ 5.00
28. Spring Steel	+ 5.00
29. Couplers & Knuckles	+ 5.00
30. Wrought Iron	+ 8.00
31. Fireboxes	— 8.00
32. Boilers	— 6.00
33. No. 2 Sheet Scrap	—13.00
34. Carsides, Doors, Car Ends, cut apart	— 6.00
35. Unassorted Iron & Steel	— 6.00
36. Unprepared scrap, not suitable for hydraulic compression	— 8.00

Preparation Charges

Ceiling fees per gross ton which may be charged for intransit preparation of any grade of steel scrap of dealer or industrial origin, authorized by OPS are:

(1) For preparing into Grades No. 3, No. 4 or No. 2, $8.
(2) For hydraulically compressing Grade No. 1, $6 per ton; Grade No. 5, $8.
(3) For crushing Grade No. 6, $3. For preparing into:
(4) Grade No. 25, $6.
(5) Grade No. 19, $6.
(6) Grades No. 12, No. 13, No. 14, No. 16, or No. 20, $10.
(7) Grade No. 17 or No. 21, $11.
(8) Grade No. 18, $12.
(9) For hydraulically compressing Grade No. 15, $8.
(10) For preparing into Grade No. 28, $10.

Ceiling fees per gross ton which may be charged for intransit preparation of any grade of steel scrap of railroad origin shall be:

(1) For preparing into Grade No. 1 and Grade No. 2, $8.
(2) For hydraulically compressing Grade No. 13, $6. For preparing into:
(3) Grade No. 16, $4.
(4) Grade No. 17, $5.
(5) Grade No. 18, $7.
(6) Grade No. 21, $4.
(7) Grade No. 23, $4.

Ceiling fees per gross ton which may be charged for intransit preparation of cast iron are limited to:

(1) For preparing Grade No. 8 into Grade No. 7, $9.
(2) For preparing Grade No. 3 into Grade No. 11, $7.
(3) For preparing Grade No. 3 into Grade No. 1, $4.

CAST IRON SCRAP

Ceiling price per gross ton for following grades shall be f.o.b. shipping point:

Cast Iron:

1. No. 1 (Cupola)	$49.00
2. No. 2 (Charging Box)	47.00
3. No. 3 (Hvy. Breakable)	45.00
4. No. 4, (Burnt Cast)	41.00
5. Cast Iron Brake Shoes	41.00
6. Stove Plate	46.00
7. Clean Auto Cast	52.00
8. Unstripped Motor Blocks	43.00
9. Wheels, No. 1	47.00
10. Malleable	55.00
11. Drop broken machinery	52.00

OPEN MARKET

(Delivered prices include broker's commission.)

Birmingham
(Delivered)

Shoveling turnings	$30.00-32.00
Cast iron borings	30.00-32.00
No. 1 cupola cast	47.00-48.00
Stove plate	42.00
Charging box cast	39.00-40.00
Heavy breakable	36.00-37.00
Drop broken machinery	42.00-43.00
Unstripped motor blocks	35.00-36.00

Boston
(F.o.b. shipping point)

No. 1 cupola cast	41.00
Heavy breakable	36.00
Stove plate	34.00-35.00
Unstripped motor blocks	30.00

Buffalo
(Delivered)

No. 1 heavy melting	43.00
No. 2 heavy melting	43.00
No. 1 bundles	44.00
No. 1 busheling	44.00
No. 2 bundles	43.00
Machine shop turnings	34.00
Mixed borings, turnings	38.00
Cast iron borings	38.00
Short shoveling turnings	38.00
No. 1 cupola cast	45.50-46.50
No. 1 machinery cast	49.00-50.00

Chicago
(Delivered)

No. 2 heavy melting	42.50
No. 2 bundles	42.50
Machine shop turnings	30.50-32.50
Mixed borings, turnings	34.50-36.50
Shoveling turnings	34.50-36.50
Cast iron borings	34.50-36.50
No. 1 cupola cast	44.00-46.00
Charging box cast	41.00-43.00
Heavy breakable	38.00-40.00
Burnt cast	37.00-39.00
Cast iron brake shoes	39.00-41.00
Stove plate	41.00-43.00
Clean auto cast	46.00-48.00
Unstripped motor blocks	35.00-37.00
Malleable	46.00-48.00
Drop broken machinery	47.00-49.00

Cleveland
(Delivered)

No. 1 heavy melting	43.00
No. 2 heavy melting	43.00
No. 1 bundles	44.00
No. 2 bundles	43.00
Machine shop turnings	34.00
Mixed borings, turnings	38.00
Shoveling turnings	38.00
Cast iron borings	38.00
(F.o.b. shipping point)	
No. 1 cupola	49.00
Charging box cast	47.00
Burnt cast	41.00
Stove plate	46.00
Clean auto cast	52.00
Unstripped motor blocks	43.00
Malleable	55.00
Drop broken machinery	52.00

Detroit
(F.o.b. shipping point)

No. 1 cupola cast	47.00-48.00
Heavy breakable	43.00-44.00
Clean auto cast	49.00-50.00
Unstripped motor blocks	40.00-41.00
Drop broken machinery	50.00-52.00
Charging box cast	44.00-45.00

Los Angeles
(Delivered)

No. 1 heavy melting	34.00
No. 2 heavy melting	31.00
No. 1 bundles	35.00
No. 2 bundles	29.00
No. 1 cupola cast	49.00
Machine shop turnings	14.00

New York
(Brokers' buying prices)

No. 2 heavy melting	35.99
Mixed borings, turnings	29.99
Machine shop turnings	25.99
Cupola cast	41.00-42.00
Unstripped motor blocks	32.00-33.00

Philadelphia

No. 1 heavy melting	41.50†
No. 2 heavy melting	41.50†
No. 1 bundles	42.50†
No. 2 bundles	41.50†
No. 1 busheling	42.50†
Mixed borings, turnings	36.50†
Machine shop turnings	32.50†
Short shoveling turnings	36.50†
No. 1 cupola cast	46.00-49.00††
Unstripped motor blocks	40.00††
Heavy breakable	45.00†
Machinery cast	52.00†
Charging box cast	47.00†

† Ceiling price. ‡Nominal.
§ Shipping point. ††Delivered.

Pittsburgh
(Delivered)

No. 2 heavy melting	44.00†
No. 1 bundles	45.00†
No. 2 bundles	44.00†
Machine shop turnings	35.00†
Shovel turnings	39.00†
No. 1 cupola cast	48.50
Heavy breakable	45.00

† Ceiling price.

San Francisco
(Delivered)

No. 2 heavy melting	29.00
Machine shop turnings	14.00
No. 2 bundles	29.00
No. 1 cupola cast	44.00

Seattle
(F.o.b. shipping point)

No. 1 bundles	30.00
No. 1 cupola cast	41.00
Heavy breakable	36.00-38.00
Unstripped motor blocks	31.00

St. Louis
(Delivered)

No. 1 cupola	48.00
Unstripped motor blocks	37.00

Youngstown
(Delivered)

No. 2 heavy melting	43.00
No. 2 bundles	43.00
Machine shop turnings	34.00

HAMILTON, ONT.
(Delivered Prices)

Heavy Melt.	$35.50
No. 1 Bundles	35.50
No. 2 Bundles	35.50
Mechanical Bundles	32.00
Mixed Steel Scrap	31.50
Mixed Borings, Turnings	32.50
Rails, Remelting	35.50
Rails, Rerolling	44.80
Busheling	30.00
Busheling new factory:	
Prep'd	33.50
Unprep'd	31.50
Short Steel Turnings	32.50
Cast Iron Grades†	
No. 1 Machinery Cast	50.00

†F.o.b., shipping point.

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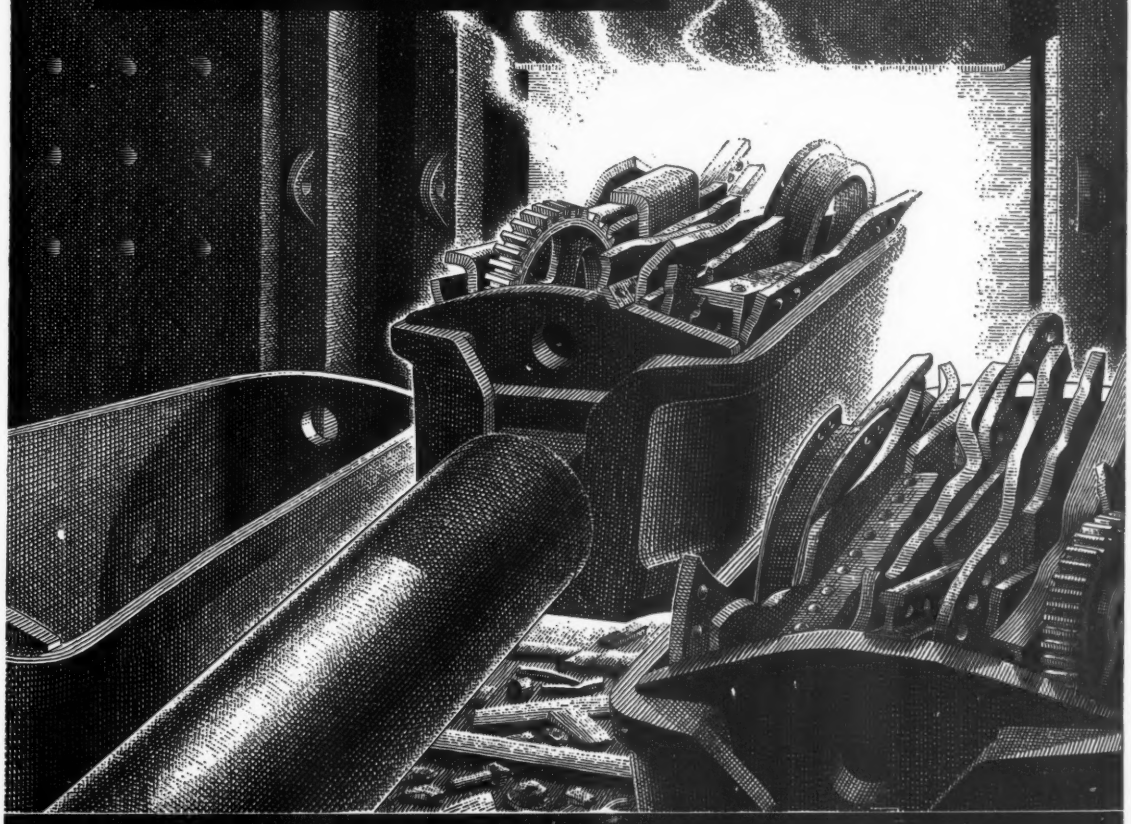

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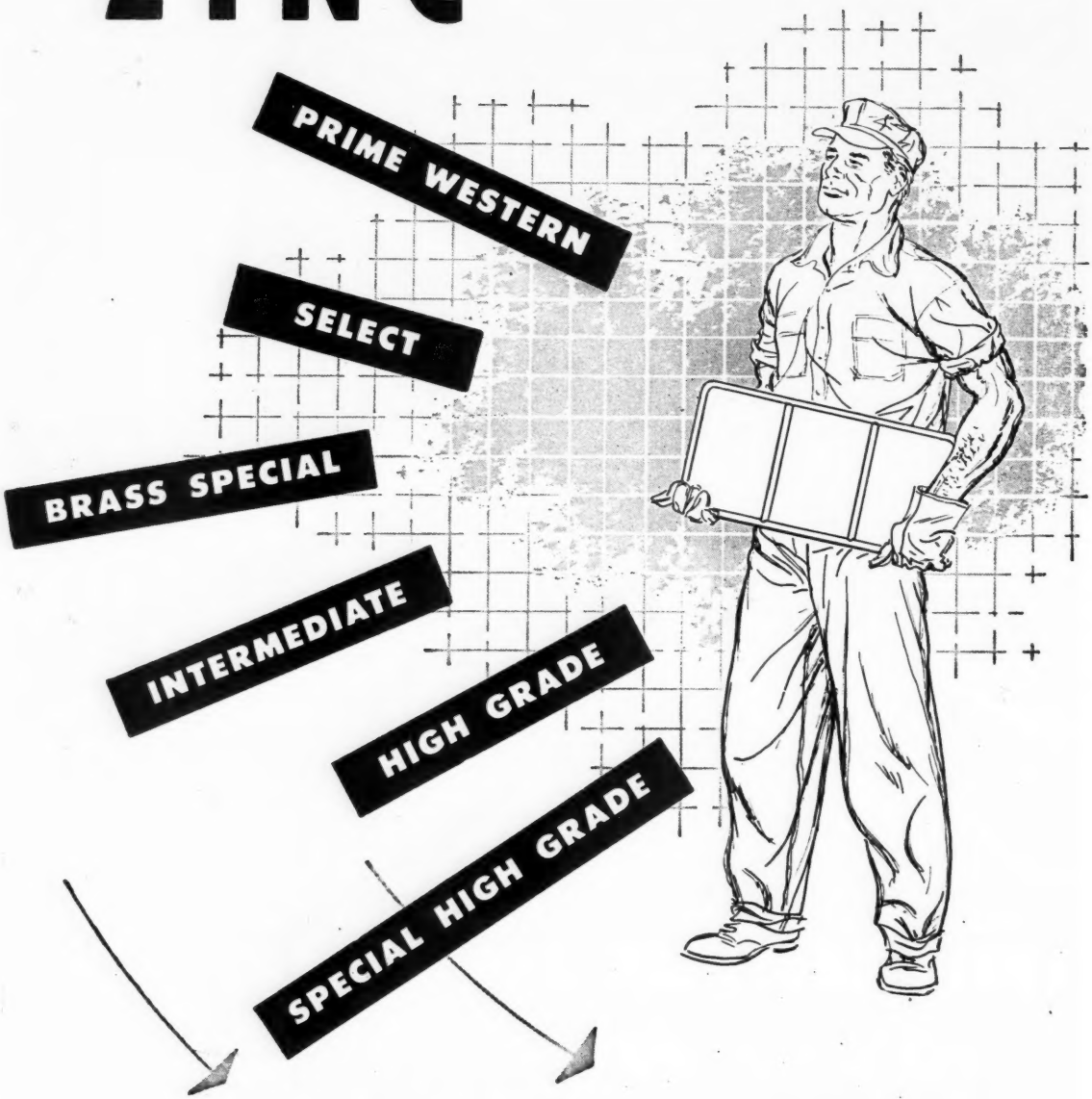

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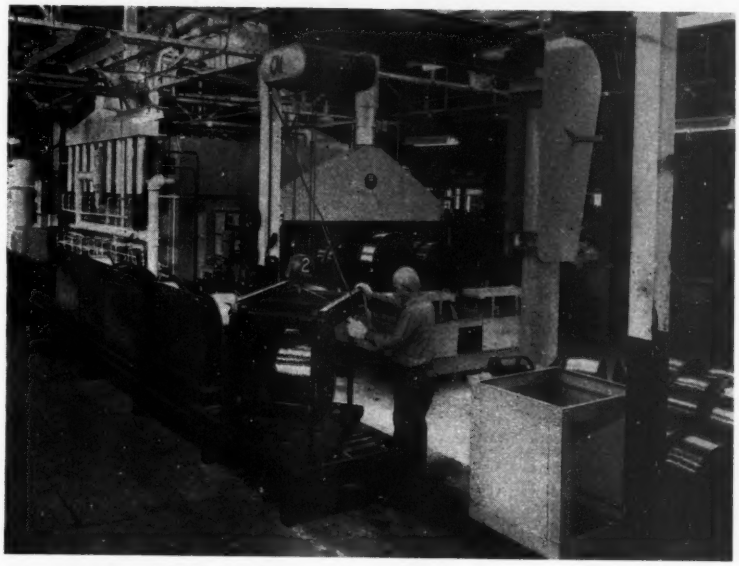
Columbus, O. Chicago St. Louis New York

The Metal Market



Anaconda Adds a New Annealer

This $82,000 annealer, newly installed by engineers of Anaconda Wire & Cable Co., at their Anderson, Ind., mill, requires only one hour to heat 6250 pounds of copper to a temperature of 900 degrees. The machine is radiant-tube heated and gas-fired. Copper is loaded on bulkhead-type trays and fed into the annealer by pusher control. Its operation needs the services of a single worker, as above

Demand holds strong on metals in approximate balance and presses hard on the scarce ones. Markets may rise for nonferrous items that slumped this fall

THE YEAR ahead, from metalworking's standpoint, will be an exceptionally good one. Here are a few reasons why industry can be optimistic: Inflation's threats are subsiding, materials will soon be readily available, controls on prices will be abandoned, demand is strong for civilian goods, defense work holds high, labor troubles won't be nearly so prevalent next year and confidence in the incoming administration is firm.

Manifestation of this optimism is the run on metals needed by industry. Demand holds strong for products in approximate balance, is insistent for those now scarce, even promises to pick up in those that have slumped this fall.

Itemized—*Aluminum* and *copper* are no longer neck-and-neck supplywise. Controls on copper and its alloys should go off fully three months before aluminum. Lifting the lid on self-authorization restrictions for construction shows government thinking on relative scarcity of CMP metals. Commercial, apartment and entertainment projects will be able to get more *steel* and copper Jan. 1 instead of May 1 as planned, but no date was set for relaxing restrictions on aluminum for this purpose.

Lead and *zinc*, plunged into the buyers' market quickly, have little more floundering ahead. Though most December purchases were made in last month's buying orgy, lead has gained strength pricewise. Some observers even think an advance in price possible. Zinc is suffering the consequences of overproduction more than underconsumption, a trend that has been compensated for already, perhaps too much. After a rough January following free trading in London, zinc should reach stabilization pricewise.

Nickel use may be eased slightly next year, but no major improvement can be seen until defense needs taper. *Tin* is plentiful, should be decontrolled soon despite official talk in Washington. At the bottom of the trouble is the Bolivian situation, where RFC can be criticized for signing a long-term contract or for not doing so. Solution will probably lie in letting private traders worry about it. *Cadmium* also is easing pricewise; St. Joseph Lead Co., dropped the price of cadmium stocks, delivered, 25 per cent to $1.50 to meet foreign competition. Other sellers held firm temporarily at $2.00. *Mercury* is currently in tight supply though; price now is $212 a flask and higher.

Copper, Brass Sales Up . . .

Copper and brass warehouses concur with prognostications of good business ahead. Latest survey by the Copper and Brass Warehouse Association shows sales increases in nearly all lines and better stock balance. Deliveries from suppliers are about a week faster, averaging 59 days in October. Sales shifted geographically, moving from fair to good in the East and Midwest, remaining fair in New England, and going from good to fair in the South and West. Sales of all products were either improved or showed no change.

In particularly short supply, listed in order of scarcity, are: Copper wire, copper rod and bar, brass sheet, brass tubing, copper sheet and brass rod. Bronze rod and brass wire eased considerably in the month. Present stock inventory compared with permitted inventory under M-82 for copper wire moved up 17 points to 52 per cent, while copper rod and bar gained 16 points to 80 per cent, and copper tube improved by 14 points to 81 per cent.

Only products losing ground cent. Only products losing ground were alloy sheet and strip (down 14 points to 80 per cent) and alloy rod and bar (down 9 points to 85 per cent). Alloy tube and copper sheet improved 2 points each to 75 and 82 per cent, respectively; copper strip showed no change at 85 per cent.

STEEL'S Metal Price Averages for Nov., 1952

(Cents per pound)

Electrolytic Copper, del. Conn.	24.500
Lead, St. Louis	13.965
Prime Western Zinc, E. St. Louis	12.500
Straits Tin, New York	121.50
Primary Aluminum Ingots, del.	20.000
Animony, f.o.b. Laredo, Tex.	34.688
Nickel, f.o.b. refinery	56.500
Silver, New York	83.250

NONFERROUS METALS

(Cents per pound, carlots, except as otherwise noted)

Primary Metals

Copper: Electrolytic 24.50c, Conn. Valley; Lake 24.62½c, delivered.

Brass Ingots: 85-5-5-5 (No. 115) 27.25c, 88-10-2 (No. 215) 40.00c; 80-10-10 (No. 305) 33.00c; No. 1 yellow (No. 405) 23.25c.

Zinc: Prime western 12.50c; brass special 12.75c; intermediate 13.00c, East St. Louis; high grade 13.85c, delivered.

Lead: Common 13.80c; chemical 13.90c; corroding, 13.90c, St. Louis.

Primary Aluminum: 99% plus, ingots 20.00c, pigs 19.00c. Base prices for 10,000 lb and over. Freight allowed on 500 lb or more but not in excess of rate applicable on 30,000 lb c.l. orders.

Secondary Aluminum: Piston alloys 20.50c; No. 12 foundry alloy (No. 2 grade) 19.50c; steel deoxidizing grades, notch bars, granulated or shot: Grade 1, 18.80c; grade 2, 18.60c; grade 3, 18.40c; grade 4, 18.20c.

Magnesium: Commercially pure (99.8%) standard ingots, 10,000 lb and over 24.50c, f.o.b. Freeport, Tex.

Tin: Grade A, prompt 121.50c.

Antimony: American 99-99.8% and over but not meeting specifications below 34.50c; 99.8% and over (arsenic 0.05% max., other impurities 0.1% max.) 35.00c; f.o.b. Laredo, Tex., for bulk shipments.

Nickel: Electrolytic cathodes, 99.9%, base sizes at refinery, unpacked, 56.50c; 25-lb pigs, 59.15c; "XX" nickel shot, 60.15c; "F" nickel shot or ingots, for addition to cast iron, 56.50c. Prices include import duty.

Mercury: Open market, spot, New York, $210-$212, nominal, per 76-lb flask.

Beryllium-Copper: 3.75-4.25% Be, $1.595 per lb of alloy, f.o.b. Reading, Pa.

Cadmium: "Regular" straight or flat forms, $1.50-$2 del; special or patented shapes $2.15.

Cobalt: 97.99%, $2.40 per lb for 500 lb (kegs); $2.42 per lb for 100 lb (case); $2.47 per lb under 100 lb.

Gold: U. S. Treasury, $35 per ounce.

Silver: Open market, New York 83.25c per oz.

Platinum: $90-$93 per ounce from refineries.

Palladium: $23-$24 per troy ounce.

Iridium: $175-$185 per troy ounce.

Titanium (sponge form): $5 per pound.

Rolled, Drawn, Extruded Products

COPPER AND BRASS

(Ceiling prices, cents per pound, f.o.b. mill, effective July 1, 1952)

Sheet: Copper 45.52; yellow brass 40.17; commercial bronze, 95% 45.15; 90% 44.38; red brass, 85% 43.10; 80% 42.34; best quality, 41.35; nickel silver, 18%, 55.08; phosphor-bronze grade A, 5%, 64.71.

Rod: Copper, hot-rolled 41.37; cold-drawn 42.62; yellow brass free cutting, 33.85; commercial bronze 95% 44.84; 90% 44.07; red brass 85%, 42.79; 80%, 42.03.

Seamless Tubing: Copper 45.56; yellow brass 43.18; commercial bronze, 90%, 47.04; red brass, 85%, 46.01.

Wire: Yellow brass 40.46; commercial bronze, 95%, 45.44; 90%, 44.67; red brass, 85%, 43.39; 80%, 42.63; best quality brass, 41.64.

(Base prices, effective July 1, 1952)

Copper Wire: Bare, soft, f.o.b. eastern mills, 100,000 lb. lots, 32.795; 30,000 lb lots, 32.92; l.c.l., 33.42. Weatherproof, 100,000 lb, 33.60; 30,000 lb, 33.85c; l.c.l., 34.35. Magnet wire del., 15,000 lb or more, 38.75; l.c.l., 39.50.

ALUMINUM

(30,000 lb base; freight allowed on 500 lb or more, but not in excess of rate applicable on 30,000 lb c.l. orders. Effective Aug. 4, 1952.)

Sheets and Circles: 2s and 3s mill finish c.l.

Thickness Range Inches	Widths or Diameters, In., Inc.	Flat Sheet Base*	Coiled Sheet Base	Coiled Sheet Circle† Base
0.249-0.136	12-48	31.6	...	...
0.135-0.096	12-48	32.1	...	...
0.095-0.077	12-48	32.8	30.6	34.9
0.076-0.061	12-48	33.4	30.8	35.1
0.060-0.048	12-48	33.7	31.0	35.4
0.047-0.038	12-48	34.1	31.3	35.7
0.037-0.030	12-48	34.5	31.7	36.3
0.029-0.024	12-48	35.1	32.0	36.8
0.023-0.019	12-36	35.7	32.7	37.5
0.018-0.017	12-36	36.4	33.3	38.4
0.016-0.015	12-36	37.3	34.0	39.5
0.014	12-24	38.3	35.0	40.8
0.013-0.012	12-24	39.3	35.7	41.7
0.011	12-24	40.3	36.8	43.3
0.010-0.0095	12-24	41.4	37.9	44.8
0.009-0.0085	12-24	42.6	39.1	46.6
0.008-0.0075	12-24	44.0	40.3	48.4
0.007	12-18	45.5	41.7	50.6
0.006	12-18	47.0	43.1	55.4

* Lengths 72 to 180 inches. † Maximum diameter, 26 inches.

Screw Machine Stock: 5000 lb and over.

Dia. (in.) or distance across flats	—Round— R317-T4	17S-T4	——Hexagonal—— R-317-T4	17S-T4
0.125	54.6	....	....	....
0.156-0.0188	46.2	....	....	....
0.219-0.313	43.6	....	....	....
0.375	42.0	48.3	50.4	....
0.406	42.0	....	....	....
0.438	42.0	48.3	50.4	....
0.469	42.0	....	....	....
0.500	42.0	48.3	50.4	....
0.531	42.0	....	....	....
0.563	42.0	....	....	47.3
0.594	42.0	....	....	....
0.625	42.0	48.7	....	47.3
0.688	42.0	....	....	47.3
0.750-1.000	41.0	43.1	....	44.6
1.063	41.0	....	....	43.1
1.125-1.500	39.4	41.5	....	43.1
1.563	38.9	....	....	....
1.625	38.3	....	....	41.5
1.688-2.000	38.3	....	....	....

LEAD

(Prices to jobbers f.o.b. Buffalo, Cleveland, Pittsburgh) Sheets: Full rolls, 140 sq ft or more $19.00 per cwt; add 50c cwt 100 sq ft to 140 sq ft. Pipe: Full coils $19.00 per cwt. Traps and bends: List prices plus 43%.

ZINC

Sheets 23.00c, f.o.b. mill 36,000 lb and over. Ribbon zinc in coils, 19.50-20.50c, f.o.b. mill, 36,000 lb and over. Plates, not over 12-in., 20.75-21.75c; over 12-in., 20.75-21.75c.

"A" NICKEL

(Base prices f.o.b. mill)

Sheets, cold-rolled, 77.00c. Strip, cold-rolled, 83.00c. Rods and shapes, 73.00c. Plates, 75.00c. Seamless tubes, 106.00c.

MONEL

(Base prices f.o.b. mill)

Sheets, cold-rolled 60.50c. Strip, cold-rolled 63.50c. Rods and shapes, 58.50c. Plates, 59.50c. Seamless tubes, 93.50c. Shot and blocks, 53.50c.

MAGNESIUM

Extruded Rounds 12 in. long, 1.31 in. in diameter, less than 25 lb, 55.00-62.00c; 25 to 99 lb, 45.00-52.00c; 100 lb to 5000 lb, 41.00c.

TITANIUM

(Prices per lb 10,000 lb and over, f.o.b. mill) Sheets, $15; sheared mill plate, $12; strip, $15; wire, $10; forgings, $6; hot-rolled and forged bars, $6.

Plating Materials

Chromic Acid: 99.9% flakes, f.o.b. Philadelphia, carloads 27.00c; 5 tons and over 27.50c; 1 to 5 tons, 28.00c; less than 1 ton 28.50c.

Copper Anodes: Base 2000 to 5000 lb; f.o.b. shipping point, freight allowed: Flat, rolled, 38.34c; oval 37.84c.

Nickel Anodes: Rolled oval, carbonized, carloads, 74.50c; 10,000 to 30,000 lb 75.50c; 3000 to 10,000 lb 76.50c; 500 to 3000 lb 77.50c; 100 to 500 lb, 79.50c; under 100 lb, 82.50c; f.o.b. Cleveland.

Nickel Chloride: 36.50c in 100 lb bags; 34.50c in lots of 300 lb through 10,000 lb; 34.00c over 10,000 lb, f.o.b. Cleveland, freight allowed on 300 lb or more.

Sodium Stannate: 25 lb cans only, less than 100 lb to consumers 86.7c; 100 or 350 lb drums only, 100 to 600 lb 71.60c; 700 to 1900 lb, 69c; 2000 to 9900 lb, 67.3c. Freight allowed east of Mississippi and north of Ohio and Potomac rivers.

Tin Anodes: Bar, 1000 lb and over, $1.42; 500 to 999 lb, $1.425; 200 to 499 lb, $1.43; less than 200 lb, $1.445. Freight allowed east of Mississippi and north of Ohio and Potomac.

Zinc Cyanide: 100 lb drums, less than 10 drums 54.30c, 10 or more drums, 52.30c, f.o.b. Niagara Falls, N. Y.

Stannous Sulphate: 100 lb kegs or 400 lb bbl, less than 2000 lb $1.11; more than 2000 lb, $1.09. Freight allowed east of Mississippi and north of Ohio and Potomac rivers.

Stannous Chloride (Anhydrous): In 400 lb bbl, 98.5c; 100 lb kegs 99.5c. Freight allowed.

Scrap Metals

Brass Mill Allowances

Ceiling prices in cents per pound for less than 20,000 lb, f.o.b. shipping point effective June 26, 1951.

	Clean Heavy	Rod Ends	Clean Turnings
Copper	21.50	21.50	20.75
Yellow Brass	19.125	18.875	17.875
Commercial Bronze			
95%	20.50	20.25	19.75
90%	20.50	20.25	19.75
Red Brass			
85%	20.25	20.00	19.375
80%	20.125	19.875	19.375
Muntz metal	18.125	17.875	17.375
Nickel silver, 10%	21.50	21.25	10.75
Phos. Bronze, 5%	25.25	25.00	24.00

Copper Scrap Ceiling Prices

(Base prices, cents per pound, less than 40,000 lb f.o.b. point of shipment)

Group 1: No. 1 copper 19.25; No. 2 copper wire and mixed heavy 17.75; light copper 16.50; No. 1 borings 19.25; No. 2 borings 17.75; refinery brass, 17.00 per lb of dry Cu content for 50 to 60 per cent material and 17.25 per lb for over 60 per cent material. Group II: No. 1 soft red brass solids 18.50; No. 1 composition borings 19.25 per lb of Cu content plus 63 cents per lb of tin content; mixed brass borings 19.25 per pound of Cu content plus 60 cents per lb of tin content; unlined red car boxes 18.25; lined red car boxes 17.25; cocks and faucets 16.00; mixed brass screens 16.00; zincy bronze solids and borings 16.25.

Aluminum Scrap Ceiling Prices

(Cents per pound, f.o.b. point of shipment, less than 5000 lb)

Segregated plant scrap; 2s solids, copper free, 10.50; high grade borings and turnings, 8.50; No. 12 piston borings and turnings, 7.50. Mixed plant scrap: Copper-free solids, 10.00; dual type, 9.00. Obsolete scrap: Pure old cable, 10.00; sheet and sheet utensils, 7.25; old castings and forgings, 7.75; clean pistons, free of struts, 7.75; pistons with struts, 5.75.

DEALERS' BUYING PRICES

(Cents per pound, New York, in ton lots)

Lead: Heavy 10.75-11.25; battery plates 5.90-6.15; linotype and stereotype 12.50-13.00; electrotype 10.75-11.00; mixed babbitt 13.75-14.00.

Zinc: Old zinc, 5.50-6.00; new die cast scrap, 5.50-6.00; old die cast scrap, 4.00-4.50.

DAILY PRICE RECORD

1952	Copper	Lead	Zinc	Tin	Aluminum	Antimony	Nickel	Silver
Dec. 1-4	24.50	13.80	12.50	121.50	20.00	34.50	56.50	83.25
Nov. 24-29	24.50	13.80	12.50	121.50	20.00	34.50	56.50	83.25
Nov. 20-22	24.50	14.05	12.50	121.50	20.00	34.50	56.50	83.25
Nov. 12-19	24.50	14.30	12.50	121.50	20.00	34.50	56.50	83.25
Nov. 11	24.50	14.00	12.50	121.50	20.00	34.50	56.50	83.25
Nov. 3-10	24.50	13.80	12.50	121.50	20.00	34.50	56.50	83.25
Nov. 1	24.50	13.30	12.50	121.50	20.00	39.00	56.50	83.25
Nov. Avg.	24.50	13.965	12.50	121.50	20.00	34.688	56.50	83.25
Oct. Avg.	24.50	14.226	13.259	121.50	20.00	39.00	56.50	83.25
Sept. Avg.	24.50	15.80	13.99	121.50	20.00	39.00	56.50	83.25
Aug. Avg.	24.50	15.80	14.067	121.50	19.923	39.00	56.50	83.25
July Avg.	24.50	15.80	15.00	121.50	19.00	39.00	56.50	82.885
June Avg.	24.50	15.06	15.74	121.50	19.00	39.00	56.50	82.75
Nov. 1951 Avg.	24.50	18.80	19.50	103.00	19.00	44.56	56.50	88.00
Nov. 1947 Avg.	21.50	14.825	10.50	80.00	15.00	33.00	35.00	74.625

NOTE: Copper: Electrolytic, del. Conn. Valley; Lead, common grade, del. St. Louis; Zinc, prime western, E. St. Louis; Tin, Straits, del. New York; Aluminum primary ingots, 99%, del.; Antimony, bulk, f.o.b. Laredo, Tex.; Nickel, electrolytic cathodes, 99.9%, base sizes at refinery unpacked. Silver, open market, New York. Prices, cents per pound; except silver, cents per ounce.

Plates . . .

Plate Prices, Page 165

Philadelphia — Eastern plate mills are booked solidly throughout first quarter on sheared and universal plate for non-defense, and have set-asides well covered for direct defense. One producer only recently opened books for March on commercial work and at the moment is proceeding to enter orders on a highly selective basis.

Boston—To the extent more light narrow plates are available and heavier stock against higher ratings is delivered closer to schedule, the supply situation is improved. There are tight spots, but tank shops and fabricators taking one-half inch and under, are better off.

New York—Virtually all sheared plate producers are booked up throughout first quarter on non-defense tonnage, with only some space reserved for high priority work.

Pittsburgh — Books are filled through first quarter. Producers express the hope controls will continue through second quarter. Several inquiries have been received from middle-west users.

Sheets, Strip . . .

Sheet and Strip Prices, Page 165 & 166

Boston—Scheduling of second quarter steel products requiring longer lead-time, including electrical sheets, has started. Distribution is preliminary and not indicative of order volume to come. But more flat-rolled tonnage is likely, nickel stainless excepted. Noteworthy decline in demand is doubtful, despite predictions of some mild reaction in consumer durable goods by June. There are spot openings in narrow cold strip schedules for first quarter.

New York—Inquiry is strong for hot and cold-rolled sheets; also galvanized. Some sellers anticipate a temporary lull later in the month due to the holidays and inventory taking. Some sheet sellers will open second quarter books late this month on hot and cold-rolled sheets.

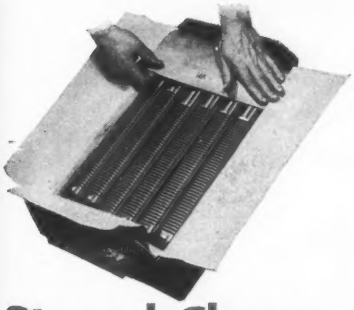
Philadelphia — Hot and cold-rolled sheet demand shows little letup. Sellers are confronted with more inquiry than they can handle. Increased galvanizing facilities at one eastern mill is making it possible for this producer to supply regular customers with a little more coated tonnage.

Pittsburgh—Some sheet and strip users are still seeking to place their fourth quarter tickets. Decontrol is not expected to provide much relief. Books for first quarter are booked full, and there is little likelihood of any additional space during April.

Cleveland—Carryover tonnage into first quarter will be heavy so that openings in rolling schedules for the period will be extremely limited. Except for high-rated military requirements there is little chance for manufacturers obtaining anything beyond their allotments for the period. Pressure for shipments continues strong and while some letdown in manufacturing operations is expected over the yearend holidays, no particular slackening in shipments is anticipated by the mills.

Chicago—Indicative of sustained demand for sheets is the fact some consumers would arrange conversion ton-

Vapor FROM Paper STOPS RUST



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nage for second quarter were mills willing to enter contracts. Farm equipment needs constitute the only weak spot in demand.

St. Louis—Heavy pressure spots are showing up in demand for cold-rolled sheets although most consumers have fair stocks. Mill backlogs will carry over into first quarter and possibly into second.

Semifinished Steel . . .

Semifinished Prices, Page 165

Los Angeles—W. J. McClung, vice president, Bethlehem Pacific Coast Steel Corp., says steel production in the 11 western states has reached 6.2 million ingot tons yearly but that additional expansion will be needed to keep pace with rapidly growing western population. Meanwhile, Hiland G. Batcheller, chairman, Allegheny-Ludlum Steel Corp., speaking here, said the steel industry faces the necessity of increasing annual capacity 1 million tons for each 1 million increase in population. Using Mr. Batcheller's ratio, California steel mills should be producing 10,700,000 tons of ingots yearly by 1965.

Reinforcing Bars . . .

Reinforcing Bar Prices, Page 165

Seattle—Rolling mill operations are down slightly due to a 10 per cent cut in power. Preparations are being made for further reductions. Considerable reinforcing bar tonnage is pending.

Structural Shapes . . .

Structural Shape Prices, Page 165

New York—Structural inquiry is improved, mostly public work. Six bridges for the New York state thruway, involving 3500 tons, came up for bidding last week, and except for the 60,000 to 65,000 ton Hudson river bridge, Rockland county, it appears most of the thruway work east of Buffalo is drawing to a close.

October structural steel bookings amounted to 184,711 tons. This compares with 207,695 for September and 252,849 for August. Total for the first ten months was 2,123,636 tons, against 2,536,172 in the like period last year.

October shipments were 258,535 tons, against 227,595 for September and 226,277 for August. Total shipments for the first ten months amounted to 2,211,237 tons, against 2,280,019 in the first ten months of 1951.

Backlogs as of Nov. 1 amounted to 2,266,875 tons, against 2,640,851 tons a year ago and 1,364,772 tons, average for 1947 to 1950, inclusive.

Boston—Contractors are sharpening pencils figuring costs for heavy construction. Power plant and industrial building is more competitive when design is included. Fabricating shops are reluctant to pay premium prices for plain structurals. Several are filling in with foreign shapes near 6.00c net, dock.

Philadelphia — Structural market pattern shows little change. Inquiry is spotty and confined largely to public work. Easing of governmental restrictions would see a spurt in various lines of commercial activity.

Los Angeles—School construction program of $185 million will sustain demand for structural material. Wide flange beams are in tighter supply.

Seattle—Two structural jobs involving 2700 tons for a Washington state bridge and construction at the Hanford works were placed last week. Additional tonnages are required for the Hanford project.

Major bridge construction projects are under consideration in Washington state, the most important being a proposed $82 million floating toll span across Puget Sound. A second project is a duplicate interstate bridge across the Columbia river at Vancouver, Wash. A third proposal is a bridge over the Hood canal, an arm of Puget Sound.

Wire . . .

Wire Prices, Page 167

Washington — Producers of merchant wire products last week were authorized by Office of Price Stabilization to calculate ceiling price increases on the basis of columnar price lists rather than the dollars-and-cents figures previously authorized.

Use of the columnar basis for pricing will not result in any substantial change in the level of ceiling prices for these products. The merchant wire products covered by Amendment 2 to Supplementary Regulation 100, Revision 1, effective Dec. 6, are: stock wire nails, stock staples, woven fence, welded fence, wire netting, fence posts, coil and loop wire bale ties, barbed and twisted wire, and wire hoops.

Historically producers have indicated their prices by means of a price schedule consisting of numbered columns. Each column represents an increase of approximately $1 per ton converted to the increase for the customary unit of sale, such as a keg of nails. Thus, price changes, either up or down, are indicated by a change in the number of the applicable column which gives the new price in dollars-and-cents per unit of sale.

Boston—First quarter allotments, with carryover, will meet heading wire requirements with most screw manufacturers. Few supplemental allotments will be taken up. Demand is heavier in coarser sizes. New volume with screw producers is fair, and automobile assemblers are pressing for shipment.

Steel Bars . . .

Bar Prices, Page 165

Cleveland—Tight supply conditions in hot-rolled and cold-finished carbon bars is expected to continue well into 1953, especially in the larger sizes. While the smaller sizes are more readily available, manufacturers are having a difficult time getting desired sizes. No definite improvement in conditions is anticipated so long as the defense program continues to get first call on mill output. Further stretchout of the defense program, being suggested in some quarters, would ease the situation much sooner than now seems likely.

Chicago—So strong is pressure for bars this quarter and first quarter next year, more consumers are cooperating with producers in determining to what extent commercial

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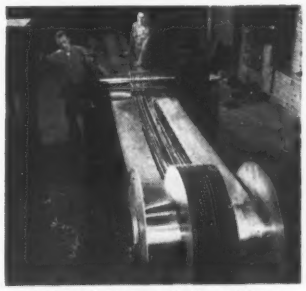

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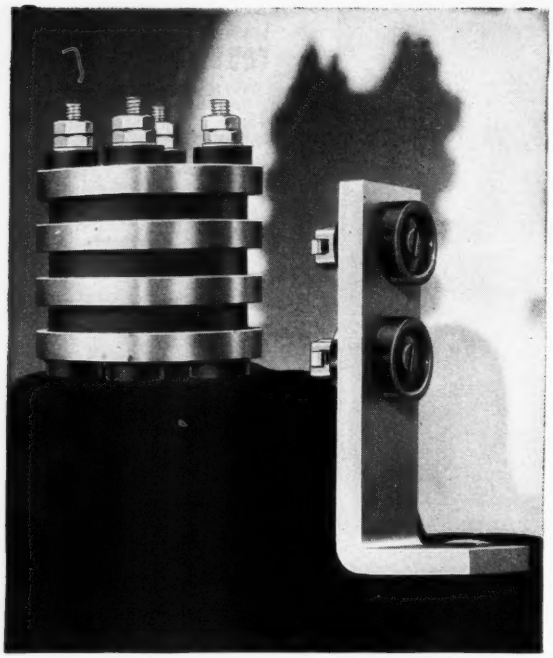

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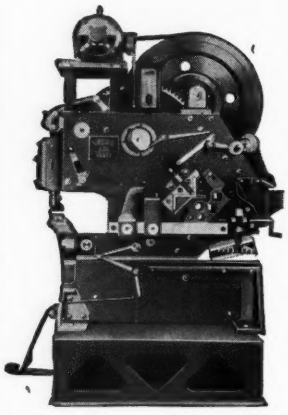

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grades can be substituted for hot-topped and quality grades. Substitution would increase yield, and assure users of more tonnage and faster delivery.

Boston — Slight improvement in cold-rolled carbon bar shipments includes larger sizes, three to four inch. Prospects for first quarter are slightly improved, although forge shops in several cases have not as yet been able to place more than 80 per cent of their allotments for the period.

New York—While sellers are opening books on hot-rolled alloys for second quarter, most producers will not take action on hot-rolled carbon bars until end of this month. Most cold drawn bar sellers opened their books on carbon as well as alloy bars some time ago.

Philadelphia—Most sizes of hot carbon bars remain scarce, especially large rounds for shell work and wide flats, four to six inches, required for railroad equipment. Producers of hot alloy bars have opened books for second quarter. Around the end of this month books will open for April on hot carbon grades.

Pig Iron . . .

Pig Iron Prices, Page 164

New York—Blast furnace production set a new monthly record in October at 6,515,091 net tons, according to the American Iron & Steel Institute. The previous monthly record was 6,300,000 tons in March this year.

October output was 350,726 tons greater than that for September and was nearly 318,000 tons more than were produced in October, 1951.

Of total October output, 6,442,024 tons were pig iron and 73,067 tons ferromanganese and spiegeleisen.

Furnace operations in the month averaged 104.2 per cent of capacity, comparing with 102.1 per cent in September.

For the 10 months ended October total output of the nation's blast furnaces was 49,421,767 net tons, comparing with 59,344,068 in the corresponding period of 1951. The drop of approximately 10 million tons was due to loss of production during the steel strike in June and July.

Comparisons follow:

	Pig Iron (net tons)	Ferromanganese and Spiegel (net tons)	Total Blast Furnace Output (net tons)
1952			
September ..	6,095,865	68,500	6,164,365
October	6,442,024	73,067	6,515,091
10 mos.	48,936,964	484,803	49,421,767
1951			
September ..	5,827,269	62,833	5,890,102
October	6,132,051	65,125	6,197,176
10 mos.	58,731,813	612,255	59,344,068

New York—With foundry operations lagging and consumer inventories limited to 30 days, pig iron supply appears ample. More foreign offerings are noted, but prices, generally, are not competitive with the domestic market.

Boston—Heavier offerings of pig iron include basic grades and the supply position of consumers is much improved. Basic inventories are better balanced. Sales of foreign iron have dwindled.

Buffalo—Spirited demand for merchant pig iron is noted. Large tonnages are moving out of the area by vessel to upper lake ports as the 1952 navigation season nears a close.

Philadelphia—Pig iron demand and supply are in easy balance here. Pressure for foundry iron is less than at any time this year. Operations at most jobbing foundries lag and business is dropping at the pipe foundries. Movement of southern iron in this district will be given a lift by reduction in all-rail freight from Birmingham. Effective Dec. 19, rate to Delaware river points as far south as Wilmington, Del., will be $11.33 including federal tax, against the current rate of $17.58.

Pittsburgh—Two new blast furnaces are about ready to add to iron availability in the Pittsburgh district. Pittsburgh Coke & Chemical's new stack is about ready to go into production and Crucible Steel Co. of America will light its new furnace at Midland before the first of the year.

Cleveland—Merchant iron sellers report they are under less pressure for shipments than for some months past. This, in part, is accounted for by the fact foundry operations continue to lag in some directions, and even some foundries on heavy defense work are not pressing for supplies like they were some time back. The foundry trade in this general area is encouraged by the projected building of another blast furnace here by the American Steel & Wire Division of U. S. Steel Co. It will be many months, however, before this stack is in operation, it still being in the engineering stage. It is understood a large part of the output of the new furnace will go to Ford's new foundry here.

Chicago—Pig iron is in the best demand-supply balance enjoyed in months. There is no surplus, however, sellers finding consumers eager to accept all tonnage offered. The improved situation reflects good blast furnace output of merchant iron with jobbing foundry operations spotty.

St. Louis—Foundry iron production has been resumed here on one of Granite City Steel's two stacks. The changeover reflects comfortable basic iron inventories.

Iron Ore . . .

Iron Ore Prices, Page 171

Cleveland — Although gales and freezing weather have slowed down shipping on the Great Lakes sharply, vessel operators are confident the 1952 iron ore shipment goal of 75 million tons will be achieved by the navigation season's close, which is in the offing.

Shipments from the head of the lakes up to Dec. 1 totaled 74,499,094 net tons, just 500,066 tons short of the season's goal, and there are enough downbound cargoes to assure hitting the target.

Shipments in the latest week for which data are available, that ended Dec. 1, were 980,759 gross tons, which was 1,084,439 tons under the movement of the preceding week, and 53,054 tons fewer than in the corresponding week of 1951. The November movement of 9,294,947 tons compared with 5,695,281 in the like month of last year.

Temporary increase of 10 cents per gross ton in ceiling rates for hauling iron ore from upper lake ports by 27 contract carriers was

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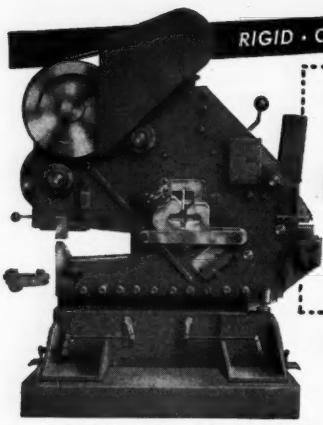

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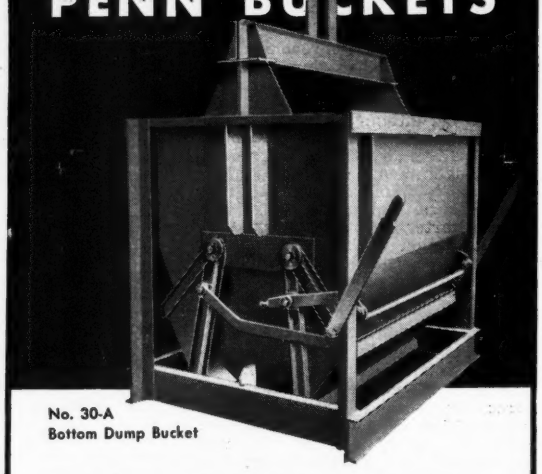

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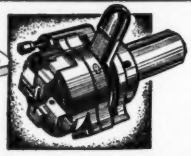

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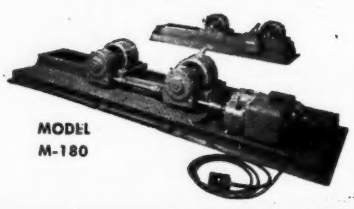

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granted by OPS last week. The increase is retroactive to July 26 and expires Dec. 31. The new rate is $1.55. Most ceiling rates of the Great Lakes carriers have been based on contracts made in the fall and early winter of 1949.

Metallurgical Coke . . .

Metallurgical Coke Prices, Page 169

New York—Oven foundry coke has been advanced $1.25 at Kearney, N. J., to $24 ovens, and similarly, at Swedeland, Pa., to $23.85 ovens. Advances at Kearney are retroactive to Oct. 1 and at Swedeland to Sept. 29. Industrial coke has been advanced $1 a ton at both points.

Cleveland — Oven foundry coke prices have been advanced $1.50 per ton in line with action approved recently by the Office of Price Stabilization. Price at Painesville, O., ovens now is $25.50 with the delivered Cleveland price $27.43. Demand for coke is steady but the foundries are not pressing.

Detroit — The merchant foundry coke producer here last week raised prices $1.50 per ton, bringing the Detroit oven price to $25.50, effective Dec. 1. Delivered prices from Detroit are up similarly.

Warehouse . . .

Warehouse Prices, Page 171

Washington—Distributors were ordered last week by the National Production Authority not to sell certain semifinished steel products except against authorized controlled materials orders. Explaining the move under schedule 4 to M-6A, NPA officials said the products affected have been distributed through some warehouses as conversion steel in transactions wherein buyers have not been required to produce CMP tickets, and in which the buyers did not charge the steel against their over-all allotments. Under the regulation no distributor is permitted to deliver any carbon or alloy ingots, billets, blooms, slabs, sheet bars, tube rounds, skelp, wire rods, or hot-rolled sheets in coils unless the delivery is made pursuant to an authorized controlled materials order.

Boston—Products in short supply, size and grade, are narrowing. Incoming volume on some products is in excess of warehouse shipments. Heavy carbon plates and bars are moved quickly.

Philadelphia — Distributors expect daily average volume to be off this month due to year-end influences. However, demand so far has been well sustained.

Cleveland — Warehouse operators expect some slackening in business this month because of the yearend holidays. In general, however, order volume, it is said, will stack up well with that of other years. Some improvement in supply conditions has been effected over recent weeks but stocks are highly unbalanced.

Chicago—Warehouses feel the reduction in receipts from mills with expiration Dec. 1 of the temporary 20 per cent boost in base period allotments effected at the end of the steel strike. Quotas now are back to 100 per cent.

Seattle — Warehouses report demand steady despite seasonal curtailment of outside building operations. Current purchases are confined to immediate needs.

Scrap . . .

Scrap Prices, Page 172

Cleveland—Steelmaking grades of scrap are moving steadily to the mills at ceiling prices. Consequently, inventories are maintained at comfortable levels, 45 to 60 days, despite sustained steel production at capacity pace. Dealers' stocks are limited, some yards being virtually barren of material, especially quality grades. Turnings are moving sporadically at ceiling. The foundries also are taking in scrap but some cast grades continue soft pricewise, shading up to $2 per ton under ceiling being reported.

Detroit—Resumption of buying of blast furnace grades by one large consumer here at ceiling brought that item back on the wanted list along with open-hearth and electric furnace grades.

Boston — Steel scrap inventories are maintained by steady shipments. Most consumers are taking deliveries at about the rate of consumption.

Buffalo—Brisk activity ruled the scrap market last week. Firmer tendencies prevail with dealers anticipating additional business at ceiling levels. Ford Motor plant here shipped about 12,000 tons of high quality scrap to Michigan. Cast scrap is easy.

Philadelphia — Open-hearth, blast furnace and low phos grades of scrap continue in steady demand. Some district mills holding less than a month's supply, are anxious to build up winter inventories. Cast grades are moving sluggishly, No. 1 cupola cast showing further weakness at $46 to $49 delivered, and charging box cast being off to $47 delivered. Weakness also is reflected in machinery cast although 200 tons were recently purchased at the $52 ceiling.

Pittsburgh — No impressive shipments are being made to mills in the Pittsburgh area. But mill stocks are substantial. No effort so far, is being made to beat down prices. Most grades are moving at ceiling.

Chicago—Adequate consumer inventories of all grades of scrap are making the market insensitive to weather conditions. Delays in receipts under contract occasion no concern. This is in sharp contrast to a year ago when scrap drives were being pushed to support steel production. Ceiling prices hold for steelmaking material but are depressed for blast furnace and foundry grades.

St. Louis—Winter weather is slowing scrap shipments. Mills are taking in scrap on old orders, but no new large orders are being placed. Prices hold steady at ceiling. Cast market is slow and prices are soft. Unstripped motor blocks have dropped $1 to $37.

San Francisco—No. 2 heavy melting steel has dropped $2 a ton to $29, reflecting comfortable inventories and steady receipts. This is $5 below ceiling.

For best results the type of material handling equipment selected must be determined by the nature of your business and its manufacturing operations.

The size of products — the type of units involved — the sequence of operations — the nature of assembly activities and other factors must be considered.

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EUCLID CRANES AND HOISTS Raise Profits

Fasteners . . .

Bolt, Nut, Rivet Prices, Page 169

Pittsburgh — November shipments of bolts and nuts were about equal to those during October. Big problem of producers centers in the larger diameters.

San Francisco—Bolts and nuts are in surplus supply and are listed by the major producer here as among the few items "hard to sell." There ordinarily is a build-up inventory, however, on these items.

Canada . . .

Toronto, Ont.—Production of iron and steel in Canada in the nine months ended Sept. 30 gained over the corresponding period of 1951. Output of steel ingots and castings totaled 2,793,581 net tons compared with 2,654,327. Pig iron production amounted to 2,003,379 tons against 1,884,135 in the 1951 period.

STRUCTURAL SHAPES . . .

STRUCTURAL STEEL PLACED

2800 tons, new plant, Meter Division, Westinghouse Electric Corp., Raleigh, N. C., to Bethlehem Steel Co.

1400 tons, Washington state Snohomish river bridge, to Union Steel Co., Los Angeles; Manson Construction & Engineering Co., Seattle, general contractor.

1300 tons, classified construction at Hanford Works, to Isaacson Iron Works, Seattle; Kaiser Engineering Corp., Oakland, Calif., general contractor.

730 tons, aircraft maintenance and hangar building, Cherry Point, N. C., to B. L. Montague Co., Sumter, S. C.; Henry C. Beck Co., Atlanta, general contractor.

500 tons, mechanical development building, Hanford Works; L. H., Hoffman, Portland, Oreg., low to Atomic Energy Commission, $355,000 for completion; external steel structure contract previously awarded to Dix Steel Building Co., Spokane, Wash., $162,000.

325 tons, warehouse, Hytron Electronics & Radio Corp., Newburyport, Mass., to A. O. Wilson Structural Co., Cambridge, Mass.

210 tons, Roosevelt Blvd. shopping center, Philadelphia, to Max Corchin & Sons, Philadelphia.

170 tons, school, Cranston, R. I., to A. O. Wilson Structural Co., Cambridge, Mass.; Gilbane Construction Co., Providence, R. I., general contractor.

STRUCTURAL STEEL PENDING

3500 tons, bridge work, six different locations, state thruway, New York; bids closed Dec. 4; bridges will be built at or near Catskill, Rochester, Utica, Syracuse, Seneca and Genesee, respectively.

700 tons, Public School No. 2, Bronx, New York; bids closed Dec. 2.

700 tons, marine unloading facilities, Department of Sanitation, Queens, New York; bids closed Dec. 3.

520 tons, additional Hanford Works construction; bids to Kaiser Engineering Corp., Oakland, Calif., Dec. 8.

400 tons, warehouse, Bohack stores, Brooklyn, N. Y., Turner Construction Co., general contractor.

340 tons, truss bridge, Simsbury, Conn.; Jones Construction Co., Columbia, Conn., low, $519,904.52.

200 tons, steel piling, state highway project—Vernon-Tolland, Conn.; M. A. Gammino Construction Co., Providence, R. I., low.

100 tons, building addition, including garage, Hartford Times, Hartford, Conn.

REINFORCING BARS . . .

REINFORCING BARS PLACED

350 tons, air field dormitories, Eielson Field, Alaska, to Bethlehem Pacific Coast Steel Corp., Seattle; Kuney-Johnson Co., Seattle, general contractor.

REINFORCING BARS PENDING

1000 tons, eight buildings, dormitories, etc., Ault Air Field, Washington state; Sound Construction & Engineering Co., Seattle, low $2,612,513 to 13th Naval District.

Unstated, Oregon state highway projects; seven concrete viaducts, Douglas county, awarded R. E. Mead, Grants Pass, $165,084, two schedules; two viaducts, 197 and 100 feet, respectively, Douglas county, awarded R. & M. Construction Co., Central Point, $74,998.

PLATES . . .

PLATES PENDING

4000 tons, classified construction at Hanford Works, Washington; placement in near future.

RAILS, CARS . . .

RAILROAD CARS PLACED

Lehigh & New England, 100 seventy-ton covered hopper cars, to Pullman-Standard Car Mfg. Co., Chicago.

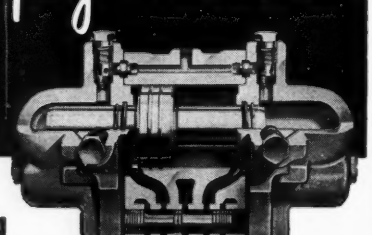
RAILROAD CARS PENDING

Southern Pacific, 2000 freight cars, comprised mainly of gondolas and open and covered hopper cars, bids asked; these will be in addition to 6300 still to be delivered against old orders.

RAILROAD MATERIALS PLACED

Alaska Railroad, 1725 tons, 115-lb rail to Colorado Fuel & Iron Corp., Minnequa, Colo.; also 150 tons spikes and bolts to Bethlehem Pacific Coast Steel Corp., Seattle; lesser awards for frogs, joints and miscellaneous to Nelson Iron Works, Seattle, American Nut & Bolt Co., Rail Joint Co. and American Brake Shoe Co.; contract for tie plates not awarded as buyer has sufficient in stock.

Multiply Pressure



without increasing horsepower

On most presses and in many other applications, pressure requirements change during the operating cycle. The Racine "Variable Volume" low pressure pump with a Racine Pressure Booster can be used to develop and hold up to 5000 psi. The horsepower input does not exceed the power needed to operate the pump at its low pressure setting.

This means lower first cost, less horsepower consumption, reduced cylinder sizes — a more compact over-all design. Pressure and volume delivered can be controlled by one of the built-in governors that are standard for all RACINE pumps.

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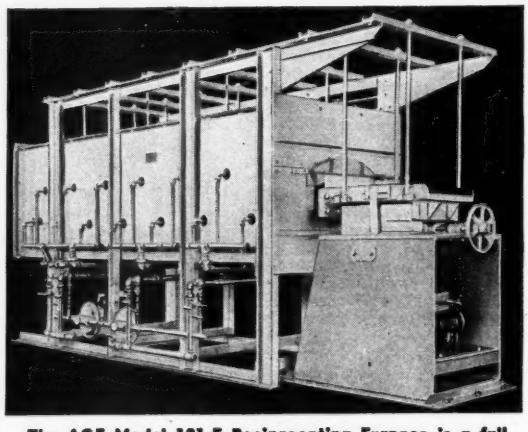

The AGF Model 191-F Reciprocating Furnace is a full muffle continuous production unit. It has no gears, chains or other troublesome working parts to be affected by the interior heat. The muffle swings from the super-structure and a mechanical movement at the end of each stroke advances the work automatically.

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Here and There in Metalworking . . .

CONSTRUCTION—ENTERPRISE—ORGANIZATIONAL CHANGES

Seidelhuber Operates New Facility

Seidelhuber Steel Rolling Mill Corp., Seattle, began operating at the close of November its new rolling mill facility at 5280 W. Marginal Way, that city. The mill is on a two-shift basis and will be on a three-shift basis by the year's end. The plant is now completely integrated with a rated capacity of 60,000 tons. Current production of the rolling mill consists of 4 in. x 4 in. round-cornered carbon steel billets. As quickly as a raw material alloying inventory can be accumulated and special steel-conditioning equipment is installed, the company will direct its major emphasis to the production of alloy and stainless steels. Next step in the company's $7 million plant construction program is the installation of additional roll stands to permit conversion of billets into merchant bar sizes. This is under way and will be completed early in 1953.

Powerful Diesel Engine Developed

Fairbanks, Morse & Co., Chicago, is bringing out an addition to its locomotive line, which it describes as the world's most powerful single-engine diesel locomotive. The unit, called the "Train Master," is powered by a 2400-hp diesel and is designed as a universal locomotive to handle a wide variety of railroad jobs, from 80 miles per hour passenger runs to high tonnage freight hauls. First 10 units have been ordered by the Lackawanna, at a cost of about $2.5 million. They are being built at Beloit, Wis., delivery starting early in 1953.

Aluminum Ore Co. Plans Expansion

Aluminum Ore Co., Pittsburgh, has plans for a major addition to its alumina works in Bauxite, Ark., for the manufacture of finished chemical products. Preliminary estimates place the cost of erecting the addition in excess of $5 million. Construction is contingent upon obtaining various government authorizations.

Industrial Supply Firms Organized

A group of tool and industrial supply manufacturers established a distributing and warehousing organization to be known as Manufacturers Industrial Supply Corporations. Branch offices and warehouses will be located in principal industrial centers to serve manufacturing members. They will sell tools and industrial supplies, manufactured by their suppliers, only to established wholesale distributors. The first of these corporations, M.I.S. of Illinois, is in operation; M.I.S. of California and M.I.S. of New Jersey will be functioning by Feb. 1. Interested manufacturers and industrial supply houses are invited to communicate with Howard Learn, general manager of M.I.S., 5459 W. Division St., Chicago 51.

Wire Manufacturer Appoints Agent

C. O. Jelliff Mfg. Corp., Southport, Conn., appointed J. J. Glenn & Co., Chicago, as its representative in that territory. The company manufactures resistance wire, specializing in the finer sizes and unusual specifications.

Engine Parts Plant Nears Completion

Construction of jet aircraft engine parts plant at St. Catherines, Ont., is nearing completion with the first production activity scheduled to start this month. Some machinery and equipment has arrived and has been placed in the plant which is expected to be in complete operation early next year. The building has a floor area of 150,000 sq ft.

Peoria Production Pool Gets Loan

Peoria Consolidated Manufacturers Inc., Peoria, Ill., a defense production pool composed of 26 small firms, was granted a loan of $814,169 by Small Defense Plants Administration. The funds will provide working capital for the performance of a $2,714,240 contract with the armed services to manufacture cartridge storage cases.

Naval Inspection Offices Opened

Naval inspection offices were opened in three cities to handle increased defense production. Assistant inspector of naval material offices were activated at Poughkeepsie, N. Y., Waltham, Mass., and Daingerfield, Tex.

Ford Plans $32.5 Million Project

Ford Motor Co. of Canada Ltd. will spend $32.5 million on expansion and transformation of its manufacturing facilities in Windsor, Ont. This expenditure will be exclusive of that at the Oakville plant, now under construction. The company plans to start engine assembly in the revamped Windsor plant by October, 1953, and should be in full operation early in 1954. Limited production will start next May on a pilot assembly line at the Oakville plant. Passenger car operations will be moved from

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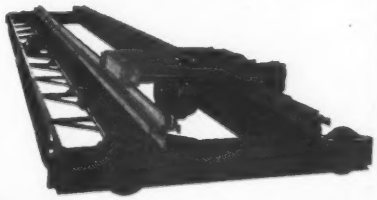

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Windsor to Oakville next summer; the truck assembly line, some time in 1954.

Goodyear Expands Chemical Division

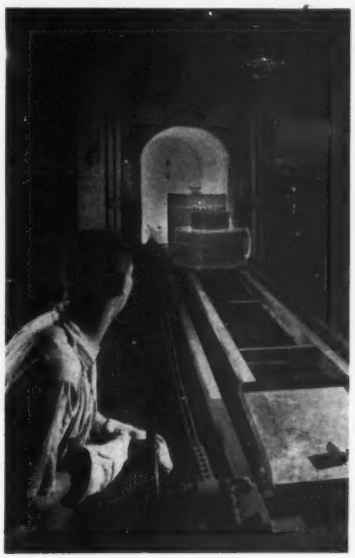
Goodyear Tire & Rubber Co., Akron, will expand its Chemical Division at a cost of $1.5 million. The project consists of an addition to existing facilities in Akron for the production of synthetic rubber.

Blaw-Knox Plans Consolidation

Stockholders of Blaw-Knox Co., Pittsburgh, will vote Dec. 15 upon a plan of corporate simplification, involving the merger of the company and its operating subsidiaries. The corporate name of Blaw-Knox Co. will be retained. At present, Blaw-Knox consists of four corporations, operating 11 business activities.

Lewis-Shepard Names Representative

Lewis - Shepard Products Inc., Watertown, Mass., appointed Mussens Canada Ltd., 65 Colborne St., Montreal, Que., as its representative. Lewis-Shepard makes materials handling equipment.



Steel—Hot from the Oven

A steel muffler for a Navy submarine glows after firing in a stationary oven at the Long Island City, N. Y., plant of Seaporcel Metals Inc. A porcelain enamel finish was bonded to the metal at a temperature of 1600° F. Steel forms the base of porcelain enameled products manufactured at Seaporcel Metals for architectural uses such as building facades and store fronts

Foxboro Co. Buys Dallas Property

New factory facilities for the assembly of control valves were acquired at Dallas by Foxboro Co., Foxboro, Mass., manufacturer of industrial instruments for process measurement and control. The new quarters are conveniently located to its branch office address, 1710 N. Akard St., Dallas.

Chiksan Opens Milwaukee Branch

Chiksan Co., Brea, Calif., manufacturer of ball-bearing swivel joints, opened a branch sales office in Milwaukee. Bev Ragsdale is in charge of the new office which will be operated under the direct supervision and control of Chiksan's midwestern district sales office in Chicago.

Eclipse Forms Subsidiary in Canada

Eclipse Fuel Engineering Co. of Canada Ltd., 705 Bloor St. W., Toronto, Ont., was organized to represent Eclipse Fuel Engineering Co., Rockford, Ill. The parent company makes high pressure steam boilers, vaporizers, heat treating furnaces and containers, metal melting furnaces, forges, gas burners, centrifugal air blowers, gas boosters, gas-air automatic proportional mixers, con-

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Motorists Dodge as Bridge Takes to the Road

"Low bridge!" was the warning as a 136-foot section of pedestrian overpass left U. S. Steel Corp.'s Consolidated Western plant at Maywood, Calif., atop a truck and trailer. Bound for a busy freeway ten miles distant, the 22-ton load taxed 16 heavy truck wheels during its tortuous trip through metropolitan Los Angeles

trol valves and gas distribution equipment.

Couse Mfg. Co. Gets Government Aid

Couse Mfg. Co., Newark, N. J., was granted a loan of $1,275,000 by Small Defense Plants Administration, to be used mainly for purchase of new equipment and working capital. The company manufactures mobile machine and service shops and has a contract to produce such equipment for the Corps of Engineers.

Muffler Firm Leases Warehouse Space

Powell Muffler Co. Inc., Utica, N. Y., leased more than 60,000 sq ft of floor space in a plant building in New York Mills, N. Y., and will take possession after the first of the year. The company plans to use the structure for warehouse purposes, moving from its present location at 315 Oriskany St., Utica.

Blasting Contractor Opens Office

Chicago Concrete Breaking Co., blasting contractor, opened its new plant and offices at 12233 Avenue O, Chicago.

Korhumel Buys Milwaukee Firm

Korhumel Steel & Aluminum Co., Evanston, Ill., purchased Federal Building Products Co., a wholesale distributor of building materials, 131 W. Seeboth St., Milwaukee. The property will be operated as a division of Korhumel under the name of Federal Building Products Corp.

GE Still Expanding Westover Plant

General Electric Co.'s plant expansion at Westover, N.Y., is still in progress. Plant officials are planning new moves to open up more space to meet expanded production schedules. The firm never has occupied all of the space available in the former Remington Rand building. There is a total of 540,000 sq ft in the plant.

Studebaker May Build in Canada

Studebaker Corp. of Canada Ltd. purchased an industrial expansion site of 190 acres between Toronto and Hamilton, Ont. Plans for development of the site have not been made but an official of the firm said it eventually will be used for expansion of manufacturing and warehousing facilities. Many Studebaker parts now imported from the United States will be made in Canada, when the expansion is completed.

Parker Appliance Names Distributor

Parker Appliance Co., Cleveland, appointed Nielsen Hydraulic Equipment Inc., New York, as an authorized distributor for its industrial tube fittings and tube working tools.

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STAINLESS STEEL
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SALES REPRESENTATION. Midwest Manufacturer of special shaped steel wire (square, flat, rectangular, Keystone, half round, oval, etc.—high or low carbon) has several exclusive territories available for individual or sales organization having experience and following in wire sales to manufacturers. Write Box 612, STEEL, Penton Bldg., Cleveland 13, Ohio.

Accounts Wanted

INDIANA AND VICINITY

Manufacturers' Agent wants feature line—100% coverage guaranteed. Machinery, electronics and gaging background, age 41. W. M. Foster, Rainbow Bend, Mooresville, Indiana.

ACCOUNTS OR DISTRIBUTORSHIPS

wanted by reputable new sales agency opening offices in Buffalo, N. Y. January 1st. Have well established contacts in this area with major consumers of carbon, alloy and stainless production steels, and non-ferrous metals. Address Box 618, STEEL, Penton Bldg., Cleveland 13, Ohio.

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PLANT MANAGER: M.I.T. GRADUATE WITH 25 years' experience in Plant Management, including Production planning, machine and plant loading, Material and tool control, quality control, purchasing, incentives, standard costs, variable budgets, overhead analysis and break-even charts, job evaluation, supervisory responsibility chart and labor relations. Capable administrator with excellent record. Write Box 559, STEEL, Penton Bldg., Cleveland 13, Ohio.

MECHANICAL ENGINEER, 37, graduate, 15 years staff and supervisory experience new construction and general plant engineering including plant layout, machine design and specifications; particularly seamless and welded tube mill equipment. Desire position executive assistant or department head. Available six weeks after final negotiation. Responses held in strictest confidence. Reply to Box 611, STEEL, Penton Bldg., Cleveland 13, Ohio.

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Midwest Cold Rolled Strip Steel Mill desires a Superintendent for rolling department. Prefer graduate industrial, metallurgical or mechanical engineer with cold rolling experience. Replies should include full particulars. All correspondence will be treated in a confidential manner and interview arranged if qualifications warrant.

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52" x 12 ga. and 10' x ¼" cap. squaring shears. 100, 300, 350 and 400 ton press brakes.

All new American made machines. Some immediate delivery—others 30 to 60 days.

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Small structural, miscellaneous and rebar fabricating shop. Approximate capacity 400 tons structural and miscellaneous and 600 tons rebars. Modern equipment, midwest city, exceptionally good territory, good architectural and contractor relationship. This plant should appeal to a large fabricator with FIT rates to Missouri River points as a feeder operation, or to an experienced structural man with engineering ability who wants to be on his own. Will require approximately $100,000.00 including inventory. Present owner will consider retaining half interest with right party.

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SUPERINTENDENT or FOREMAN
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WE OFFER FOR SALE THE FOLLOWING:

2 only Progressive Welders,

Model 229E12B5, Serial Nos. 2801, and 2802.

Bought July 1945.

These are battery powered, air operated, rocker arm type welding machines, with a throat depth of 18".

The batteries are 12 cell Exide type M57 batteries of 660 amp. hour rate. The machines are rated at 25,000 amperes.

The maximum tip pressure at 80 lbs. psi line pressure is 1800 lbs. psi.

Equipped with 220 volt, 3 phase dry type Rectifiers.

The welders are equipped with electronic controls.

Batteries not included.

1 only Progressive Welder,

Model 229E30B7, Serial No. 2519.

Bought March 1945.

This is a battery powered, rocker arm type welding machine with a throat depth of 36".

Progressive welder air operated DC Contactor, Weltronic Timer, Allen Unitron Rectifier.

This welder is operated by a 30 cell battery.

The maximum tip pressure at 80 lbs. psi line pressure is 4,000 lbs. psi.

Equipped with 220 volt, 3 phase dry type Rectifiers.

The welder is equipped with electronic controls.

Batteries not included.

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West Bend, Wisconsin

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HIGH CARBON VANADIUM TOOL STEEL
WATER HARDENING—
ABRASIVE RESISTANT

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1	15/16" Dia. Rd.	18,530 lbs.
2	15/16" Dia. Rd.	100,486 lbs.

STRAIGHT CARBON TOOL STEEL
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1	13/16" Dia. Rd.	6,125 lbs.
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HOT WORK TOOL STEEL
FOR FORGING & DIE BLOCKS

8	5/8" Dia. Rd.	9,578 lbs.

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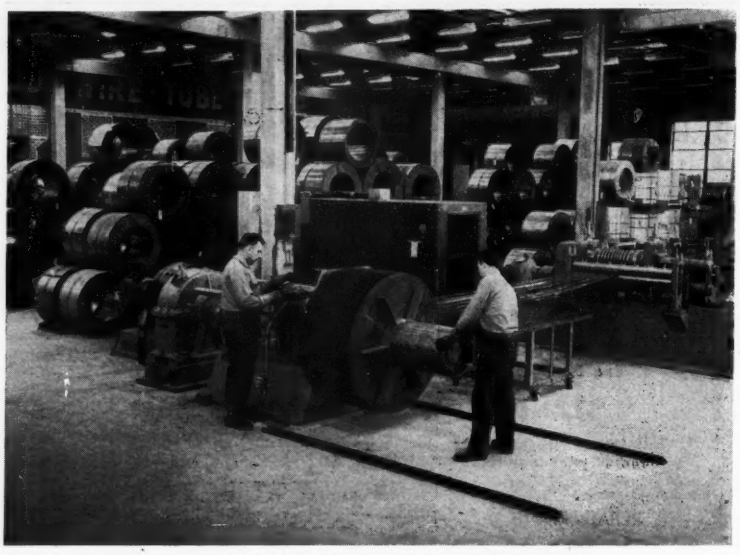

New Slitting Machine Handles Two-Mile Coil

At Eastern Brass & Copper Co. Inc.'s new Bronx, N. Y., plant, this 48-inch slitting machine works on its first order. Geared for extremely close tolerances, the new installation can handle a single coil of eight tons in weight, up to 48 inches in width and over two miles long, while making as many as 36 cuts in one operation. A combination of five motors totaling 127½ hp runs the machine

Brampton Project Nears Completion

Union Metal Mfg. Co. of Canada Ltd., subsidiary of Union Metal Mfg. Co., Canton, O., expects to place its Brampton, Ont., plant into operation early in January. Initial production will consist of parking meters for the company's Dual Parking Meter Division, to be followed by production of switch boxes, meter enclosures and similar products of the company's Superior Switchboard & Devices Division. Subsequent production will also include Union Metal's tapered metal street and floodlighting poles, foundation piles, and materials handling boxes, skids, pallets and combinations. V. J. Lajeunesse, Canton, is president of the Canadian firm; O. L. Beatty, Preston, Ont., general manager of the Canadian plant.

Executive and Sales Offices Moved

Pacific States Steel Corp. and American Forge Co., both under the same management, moved their executive and sales offices from Oakland, Calif., to the site of the plants at Niles, Calif. Joseph E. Eastwood Jr. is president of both companies.

Westinghouse Widens Service in West

Charles R. Long, Pacific Coast district lamp engineer for Westinghouse Electric Corp., transferred his headquarters from Los Angeles to 410 Bush St., San Francisco. Walter H. Thompson, district lamp manager, appointed Earl F. Larson as South Pacific Coast district lamp engineer with headquarters at 600 St. Paul Ave., Los Angeles.

Hertner Appoints Representative

Hertner Electric Co., Cleveland, manufacturer of industrial-truck battery chargers and motor generators, appointed Russell F. Clark Co., Pittsburgh, as district representative.

Border Tool & Die Ltd. Expanding

Border Tool & Die Ltd., Windsor, Ont., is erecting a plant which will provide facilities for higher production and the making of larger dies. Cost of the project is estimated at $120,000.

Weber Aircraft Opens Ohio Office

Weber Aircraft Corp., Huntington Park, Calif., opened an office in Dayton, O. The company manufactures ejection seats, fixed crew seats, passenger seats, galleys, wash basins and other interior equipment for aircraft.

Kirkpatrick Heads Magnesium Group

James S. Kirkpatrick was elected president of Magnesium Association, New York. Mr. Kirkpatrick is director of research and development for Brooks & Perkins Inc., Detroit, producer of magnesium sheet and plate and magnesium fabricated assemblies. The association will hold an International Magnesium Exposition next spring in Washington.

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Advertising Index

Alan Wood Steel Co. 162
Allegheny Ludlum Steel Corporation 50
Allis-Chalmers 23
American Chemical Paint Co. 108
American Gas Furnace Co. 184
American Shear Knife Co. 16
American Zinc, Lead & Smelting Co. 174
American Zinc Sales Co. 174
Angier Corporation 177
Arcos Corporation 116, 117
Atlas Car & Mfg. Co., The 111

Babcock & Wilcox Co., The, Refractories Division 107
Baldwin-Lima-Hamilton, Standard Steel Works Division 40, 41
Belmont Iron Works, The 186
Bethlehem Steel Co. 1
Blaw-Knox Co., Pittsburgh Rolls Division 43
Boiardi Steel Corporation 186
Bryant Chucking Grinder Co. 37, 38
Bullard Co., The 141, 142

Cadman, A. W., Mfg. Co. 182
Camcar Screw & Mfg. Corp. 152
Carpenter Steel Co., The 22
Chase Brass & Copper Co. 130
Chicago Freight Car & Parts Co. 137
Cincinnati Grinders, Inc. 73
Clearing Machine Corporation 158
Cleveland Cap Screw Co., The 125
Cleveland Crane & Engineering Co., The, Cleveland Tramrail Division 44
Cleveland Steel Tool Co., The 186
Cleveland Tramrail Division, The Cleveland Crane & Engineering Co. 44
Cleveland Twist Drill Co., The 123
Cold Metal Products Co., The 113, 114, 115
Colorado Fuel & Iron Corporation, The, Wickwire Spencer Steel Division 129
Commercial Contracting Corporation 191
C-O-Two Fire Equipment Co. 24
Cowles Tool Co. 180
Cross Co., The 89
Cuyahoga Spring Co., The 138

Dings Magnetic Separator Co. 20

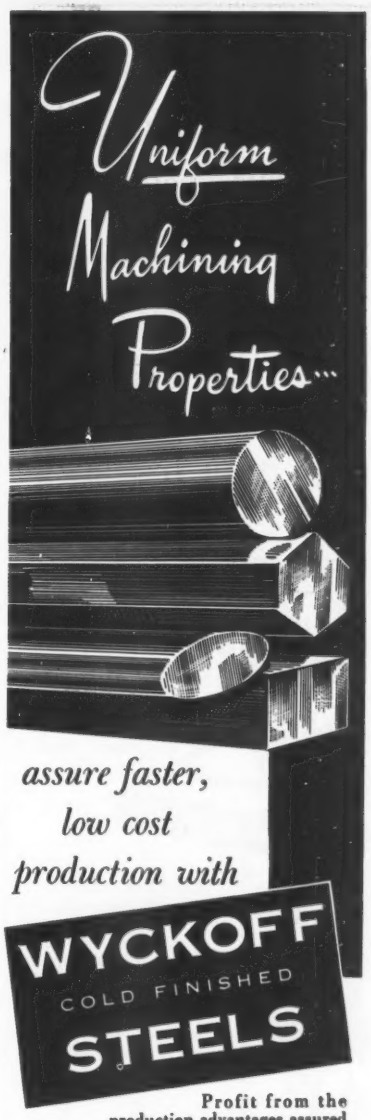
Eastern Machine Screw Corp., The 182
Eastman Kodak Co., X-ray Division 127
Easton Car & Construction Co. 144
Ederer Engineering Co. 139
Electric Furnace Co., The 110
Enterprise Galvanizing Co. 186
Enthone, Inc. 54
Euclid Crane & Hoist Co., The 183

Felters Co., The 143
Ferry Cap & Set Screw Co., The 118
Firth Sterling, Inc. 155

Gaylord Container Corporation 13
General American Transportation Corporation 92
General Electric Co. 30, 31
Gisholt Machine Co. 47
Gould-National Batteries, Inc. 48
Great Lakes Steel Corporation 78

Hansen Manufacturing Co., The 26
Hanson-Van Winkle-Munning Co. 34
Hevi Duty Electric Co. 12
Horsburgh & Scott Co., The 126

Continued on following page



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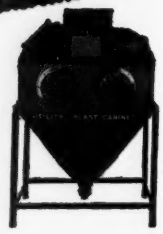
Here's BIG NEWS on Blast Cleaning Dust Control Precision Finishing

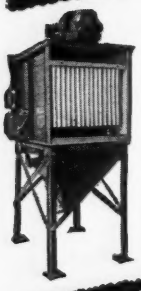
BLAST CLEANING!



Blast Cleaning Cabinet cleans rust, grime, dirt, paint, etc., from metal parts. Produces a smooth surface on pieces up to 60" x 36". Models from $319.00 and up.

Blast Cleaning Machine removes rust, dirt, scale, etc., is ideal for maintenance work. Cleans large objects such as bridges, tanks, etc., before painting. Six sizes, portable or stationary from $170.00 and up.

DUST COLLECTING!



Unit Dust Collector stops dust at source, minimizes machine wear and tear, reduces housekeeping and maintenance costs. Solves many grinding and polishing nuisances. Models from $286.00 and up.

PRECISION FINISHING!

Hydro-Finish Cabinet uses liquid blast to polish, clean and finish molds, dies, etc. Removes scale, discoloration with minimum hand work. Holds tolerances to .0001". Models from $1410.00 and up.

Write for details on these machines to: Pangborn Corp., 1600 Pangborn Blvd., Hagerstown, Md.

Pangborn

Look to Pangborn for the latest developments in Blast Cleaning and Dust Control Equipment

Advertising Index

Concluded from preceding page

Illinois Tool Works 145
Industrial Brownhoist Corporation 29
Inland Steel Co. 64
Insul-Mastic Corporation of America 11
International Nickel Co., Inc., The 60
Iron & Steel Products, Inc. 189
Ironsides Co., The 25

Jandru Steel Corp. 188, 189
Johnson Bronze Co. 161
Johnson Machine & Press Corp. 128
Jones & Laughlin Steel Corporation 135

Kaiser Aluminum & Chemical Sales, Inc. 178, 179
Kearney & Trecker Corp. 91
Keystone Steel & Wire Co. 10
King Fifth Wheel Co. 133
Koppers Co., Inc., Engineering & Construction Division 18, 19
Korhumel Steel & Aluminum Co. ..... Inside Front Cover

Laminated Shim Co., Inc. 131
Lavallee & Ide, Inc. 85
Lindberg Engineering Co. 49
Linde Air Products Co., A Division of Union Carbide & Carbon Corporation 36
Logan Engineering Co. 103
Luria Brothers & Co., Inc. 173

Marchant, Geo. F., Co. 144
Marley Co., The 3
Master Electric Co., The 109
Mathews Conveyer Co. 187
May-Fran Engineering, Inc. 148, 149
Medart Co., The 119
Mesta Machine Co. 74
Michigan Crane & Conveyor Co. 185
Moline Tool Co. 186
Morey Machinery Co., Inc. 182
Morse Twist Drill & Machine Co. 14, 15

National Acme Co., The 51
National Steel Corporation 78
Nilson, A. H., Machine Co., The 120
Norton Co. 170

Ohio Crankshaft Co., The 2
Ohio Knife Co., The 32
Ohio Locomotive Crane Co., The 186

Pacific Tube Co. 33
Pangborn Corporation 192
Pannier Corporation, The 6
Parker Rust Proof Co. 53
Penn Iron Works, Inc. 182
Pennsylvania Flexible Metallic Tubing Co., Inc. 168
Peters-Dalton, Inc. 122
Pioneer Engineering & Manufacturing Co., Inc. 190
Pittsburgh Coke & Chemical Co., Protective Coatings Division 46
Pittsburgh Gear Co. 157
Pittsburgh Rolls Division of Blaw-Knox Co. 43
Pittsburgh Steel Co. 27
Porter, H. K., Inc. 136

Racine Hydraulics & Machinery, Inc. 184
Reed Engineering Co. 182
Reliance Electric & Engineering Co. 5
Republic Steel Corporation 35
Roebling's, John A., Sons Co. 39
Rogers, Dayton, Manufacturing Co. 186
Russell, Burdsall & Ward Bolt & Nut Co. 82
Rust Furnace Co. 81
Ryerson, Joseph T., & Son, Inc. 56

St. Joseph Structural Steel Co. 189
Sharon Steel Corporation 7
Shimer, Samuel J., & Sons, Inc. 182
Silent Hoist & Crane Co. 181
Sivyer Steel Casting Co. 124
Snyder Tool & Engineering Co. 8, 9
Solar Steel Corporation 153
Stamco, Inc. 63
Standard Steel Spring Co. 150, 151
Standard Steel Works Division, Baldwin-Lima-Hamilton 40, 41
Standard Tube Co., The 132
Stanley Works, The 187
Steel Equipment Co. 17
Stuart, D. A., Oil Co., Ltd. 45
Sun Oil Co. 86
Sun Shipbuilding & Dry Dock Co. 28

Tennessee Products & Chemical Corporation 4
Timken Roller Bearing Co., The ..... Back Cover
Toledo Stamping & Manufacturing Co. 186
Torrington Co., The, Specialty Department 156
Torrington Co., The, Swager Department 156
Towmotor Corporation 140
Tubing Appliance Co. 137

Union Carbide & Carbon Corporation, Linde Air Products Co. 36
United Engineering & Foundry Co. 55
United Screw & Bolt Corporation 59
United States Steel Co. 146
United States Steel Corp., Subsidiaries 42, 146
United States Steel Supply Division, United States Steel Co. 146
Universal Atlas Cement Co. 42

Van Huffel Tube Corporation 121

Ward Steel Co. 187
Webb Corp., The 180
Wesche, B. A., Electric Co., The 180
Wheland Co., The 187
Wickwire Spencer Steel Division of The Colorado Fuel & Iron Corporation 129
Willson Products, Inc. 134
Wilson, Lee, Engineering Co., Inc. ..... Inside Back Cover
Winsmith, Inc. 154
Wolverine Tube Division 105
Worthington Corporation 52
Wyckoff Steel Co. 191

Yoder Co., The 21

Zeh & Hahnemann Co. 186

~ ~ ~

Table of Contents, Page 5

Classified Advertising Pages 188, 189